COAL AGE

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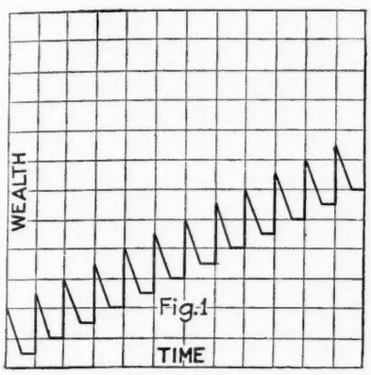


The Value of Thrift

What does the curve representing your financial condition look like? Does it show a gradual upward tendency or is it going steadily downhill?

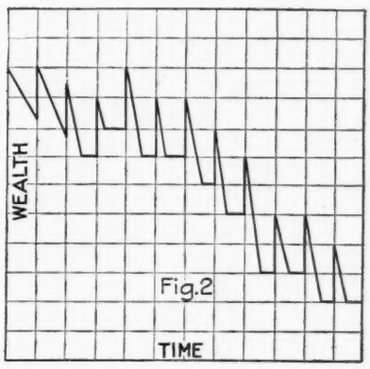


FIG. 1 tells the story of the wise man. He saves and provides for the future. Each payday comes and gives him a lift. He pays his bills promptly, and after his bills are paid, each balance is somewhat higher than the one before.

On the other hand, Fig. 2 illustrates the case of any number of persons. Here we see paydays coming at regular intervals, but followed by periods of temporary extravagance that result in a steady diminution of the capital of the thriftless person.

An industrial organization of any kind that does not plan for the future cannot exist for any length of time. Yet many families try to get along on the "feast or famine" principle that inevitably winds up in failure.

A young miner in the employ of a prosperous mining company recently remarked: "I don't see why I can't save any money. I'd like to save—that's certain. But for some reason or other I never have a cent two weeks after payday."

The time to think about saving is the minute when the pay envelope is handed to you—not two weeks later. The only practicable method of saving is to plan ahead and save first rather than last. The man who on payday lays by a reasonable and definite portion of his earnings is the one who accumulates wealth.

The person who thinks he will save what is left after he has lived for two weeks or a month on the proceeds of his previous pay seldom has anything left to save.

It is true that many families are enduring misfortune of one kind or another that prevents their saving anything. But there are countless others who are able and who know that they ought to save, but through indifference and lack of thrift they neglect the opportunity. On the other hand, it would seem that some persons have neither the ability nor the desire to save.

An incentive in the direction of economy is a carefully kept record of expenditures. If the person who thinks he cannot save will keep an account book for a month or two, or still better for a year, he will discover upon looking back over it that there were many useless expenditures that could easily be avoided in the future and the money involved could be invested or be placed to advantage in the bank.

An account book is useful also in planning for the future. With it one may readily estimate the proportion of his income required for necessary expenses, and thus determine the amount he may immediately take out of each pay to add to his savings. The importance of planning ahead cannot be over-estimated.

THRIFT MEANS GROWTH

The thrifty person grows in strength of character and in reputation. He provides for the future. A good name and a well-ordered life are things that are worth seeking.

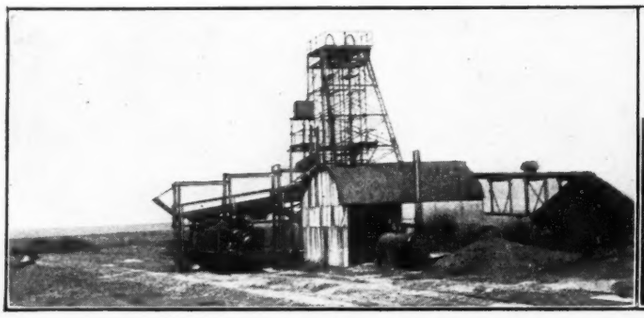
South Africa's Interest in the South American Markets

By J. F. K. Brown*

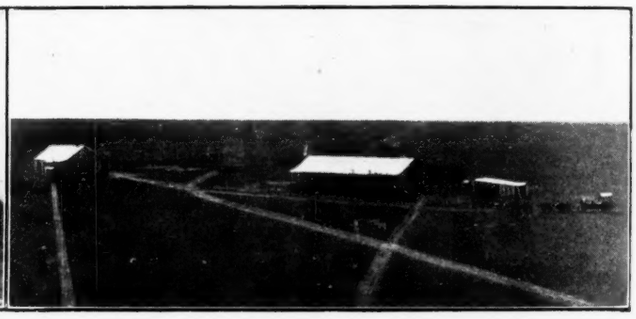
SYNOPSIS—Coal in the Transvaal and Natal may be produced cheaply, and the labor supply is adequate and fairly steady. Although certain obstacles are to be overcome, it would appear that, despite its somewhat lower quality, South African coal could be laid down in South America at a price that would make it a strong competitor of both North American and English fuels.

In view of the discussions that have taken place on the possibility of an American export coal trade to the eastern seaboard of South America, it may be of interest to have a look at the resources of another country which has an eye on that business for itself at some time in the future—namely, South Africa.

A great variety of considerations help toward a country's success in an export coal trade, but of the more important considerations there are, first, labor—since this mainly determines the cost of production; second, the position of the mines governing the internal freights, and therefore costs at the point of shipment; third, the quality of the coal, which governs the price obtainable in the world's markets; and fourth, the volume of the internal trade—limiting in this particular case the total production of the country to a tonnage proportionately much lower than the possible gross production even with present equipment. This is a direct cause of the desire to look seaward for new worlds to conquer.



A SMALL HEADFRAME AND SCREEN HOUSE



VIEW OF COLLIERY OFFICES FROM HEADFRAME

There is no ground upon which to base a comparison between coal-mining practice in South Africa and methods followed in the States, because the difference in essential features is great. There is a saying that "coal-mining practice is the same the world over," but like many other "sayings," it is only true superficially. An engineer accustomed to American practice, transported to South Africa, would find great differences on many points and would require to recast his knowledge and experience in order to judge the situation fairly.

The labor of South Africa is of course "black," but unlike the negro of the States, the black of South Africa only earns, roughly, 10 per cent. of the wages paid to the white man. On a month's work the black's wage will probably not be more than $15 to $20. The mine provides the rations, which consist of meal throughout the week and meat once on Sunday. As a gratifying addition some mines now and again add vegetables if they can get them.

Housing conditions are something on a par with the "quarters" of the negroes of the South in the days of slavery. A piece of ground is set apart, and on this either the company builds or the men themselves erect huts to suit their own taste. Those companies that build their own huts usually go a step farther and surround the compound with a wall and gate. They also attend to the preservation of order and cleanliness through an almost military organization. At times of tribal fights and other (sometimes nocturnal) diversions on the part of the black population, the usefulness of such compounds as these is evident.

Nevertheless the black man is not one whit behind his white brother in preferring his freedom, and those mines which do not draw the reins of control tightly and where a little freedom is allowed are better off generally in the supply of labor they control.

The operation of the compound is under the eye of an official known as the compound manager whose duty it is to see that the blacks are well treated, that peace is preserved and that sanitary conditions are fulfilled—a very important matter in a hot climate. Under his guidance the men turn out to the shaft in the morning, and he investigates any cases of absence or supposed malingering. Through his report a mine manager knows before his men go down what places will be vacant.

Natives Are Fair Miners

As a rule the men make fair miners and if properly treated are faithful after a fashion. Harvest time in a country where work is a pastime to be avoided is of course always a period of scarcity in the labor market except with mines large enough to command great resources in recruiting. A "boy" well-treated will nearly always come back to the same mine after the agricultural work is done, and in many cases he will bring others of his own tribe with him. By attending to this point of fair treatment a steady stream of labor can be assured.

Many races go to make up the admixture of "boys" at any mine. All are not always peacefully inclined, and a preponderance of any particular tribe is always a pos-

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sible source of trouble. The larger operators have to put up with this condition as they cannot obtain a sufficient supply of labor entirely from one tribe. Smaller mines, whose requirements are less, are better able to get together boys from one district and to keep recruiting from the same area.

To keep up the supply of labor there is a system of recruiting in vogue. The country is divided, except in the outlying areas, into labor districts, a commissioner presiding over each. The recruiting practically amounts to the employment of labor agents, just as is the custom to a great extent in this country, and is equally as unsatisfactory from all points of view except that of the recruiting officers.

There are various terms of service agreed upon, ranging from six months to three years, the native having the choice in this respect; but once he has chosen, he is expected to stay out the length of time stated in the agreement. As a means to prevent his absconding, full particulars of his name, age, kraal, place of work and latterly in the actual labor areas his thumb prints are taken and registered with the commissioner of the district as being the distinctive marks of a "boy" employed by the mine designated.

The definition of a "boy" is any male native from 12 years of age to 80. Below 12 he is a "pickaninny"; over 80 he vanishes. A boy cannot leave one district for another without a written pass, and no ticket agent can issue a railway ticket without the production of this pass. Careful watch is kept on the coming and going of the natives, and any black man is liable to be asked by any police officer, and in fact in the outlying districts by any white man, to produce his pass. If it does not seem to be correct, he automatically goes to the police station.

Absconding Boys Are Promptly Detected

By these measures any runaway laborer is promptly trailed and the individual transported, even from a new mine where he may have started work, back to the place to which he originally agreed to devote his sole services.

In the coal mines work commences about 6 o'clock and continues till 6 o'clock at night. Usually the forenoon is the best work period. As a rule the native is of slight build, and although wiry, he does not last particularly well; consequently the most coal is obtained throughout the early hours. Depending on the seam and the conditions, an average of about two tons per day is produced per man employed underground.

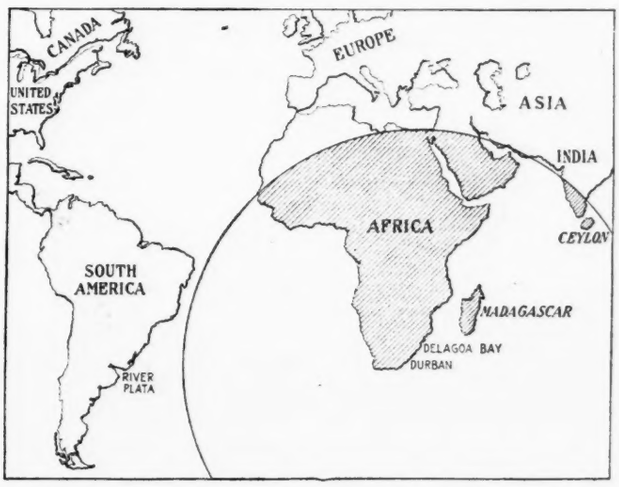
As miners the labor is fairly efficient, and the blacks are by no means devoid of intelligence. There are many tribes who seem to have a liking for machinery, and many good enginemen have been evolved for operating stationary, locomotive and hoisting engines.

It is against the law to have a black hoisting engineer, but nevertheless one sometimes comes across a native hoisting gayly and steadily throughout the day while his white boss and the proper hoistman may be sleeping off the "night before" carousal. To find that the blacks are capable in this respect is all the more creditable, since they have not been taught mechanics. Furthermore the language in use between the white and black does not permit of explanations on the subject of superheated steam or the uses of reversing gears. Consequently the black has to arrive at his knowledge seemingly by instinct and from watching the other man.

Under the conditions described the native exists practically as a prisoner on parole. This or some similar system is necessary, however, in order to obtain some measure of control over the native population. As a rule the black's sense of obligation is conspicuous by its absence, and his nature is largely migratory.

White labor in a black man's country is undoubtedly one of the curses of a manager's life and represents the uncertain element in the South African labor market. As a rule the white man occupies the position of a small boss, and if a good man he is well worth the high wages paid him. Fortunately for the coal-mining districts the proportion of white to black can be held low, under proper management not exceeding 2 per cent.—a fact which helps materially the cost of mining.

These conditions point to a steady labor supply that is cheap and must remain so for many years. As a consequence the South African coal owner can be reasonably sure that at the worst his cost of production will remain much at the same level for a considerable time. Any rise in wages will be slow—much slower than in coal fields operated by a white population. In other countries costs are constantly on the increase, but the South African producer will not suffer this misfortune.



SHADED AREA SHOWS WHERE SOUTH AFRICAN COAL COMPETES WITH THAT OF OTHER COUNTRIES

Mines Are High and Salubrious

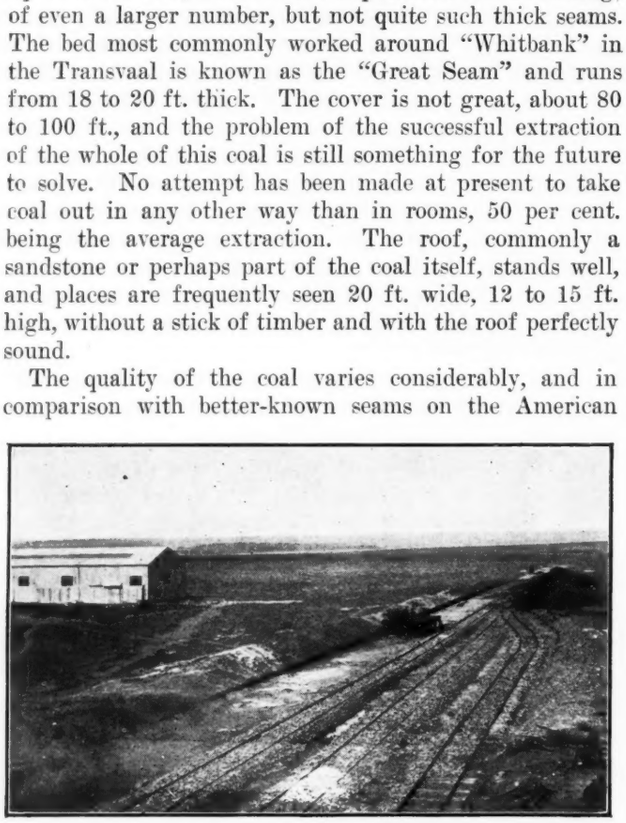
The mines in the Transvaal stand on what is known as the high veldt, from 3,000 to 4,000 ft. above the level of the sea, and the climate is healthful. Outcrops of the coal beds are frequent in the "spruits" that cut into the geological arrangement of the rocks, but for the purpose of easy extraction are useless in comparison with other methods. As a rule the angle between the slope of the ground and the dip of the seam, if any, is only a few degrees. Above the coal there is more often than not a porous sandstone, which allows the water to pass through, causing great deterioration of the coal bed for a considerable area at the outcrop.

To reach a good coal from the outcrop usually means the driving of an open ditch up to half a mile in extent, in which the coal would begin as a seam of a few inches of a soft, mushy nature and gradually increase in thickness as the cover increased. As a rule the amount of water encountered is considerable but this depends on the rainfall. Above the seams the rocks are practically

sandstone filters, and nearly all the rain water finds its way down through the roof into the coal measure.

The Transvaal coal field may be considered as one made up of thick beds, while Natal is possessed on the average of even a larger number, but not quite such thick seams. The bed most commonly worked around "Whitbank" in the Transvaal is known as the "Great Seam" and runs from 18 to 20 ft. thick. The cover is not great, about 80 to 100 ft., and the problem of the successful extraction of the whole of this coal is still something for the future to solve. No attempt has been made at present to take coal out in any other way than in rooms, 50 per cent. being the average extraction. The roof, commonly a sandstone or perhaps part of the coal itself, stands well, and places are frequently seen 20 ft. wide, 12 to 15 ft. high, without a stick of timber and with the roof perfectly sound.

The quality of the coal varies considerably, and in comparison with better-known seams on the American



A VIEW OF THE VELDT FROM THE BANKHEAD OF AN AFRICAN COLLIERY

side of the Atlantic is somewhat poor, but not sufficiently so to disqualify it entirely in any market. The ash is fairly high and the calorific value lower in proportion.

Analyses of a few of the better-known coals from the various districts are given in the accompanying table:

ANALYSES OF A FEW SOUTH AFRICAN COALS

	Moisture	Volatile Matter	Fixed Carbon	Ash	Sulphur	B.t.u.
Cape Colony—						
Stormberg	1.77	9.22	68.44	27.34	0.97	.....
Stormberg	1.50	9.50	68.51	19.70	0.79	.....
Beaufort West	...	21.7	76.2	2.14	0.86	12,740
Indwe	...	6.92	83.44	7.95	0.87	14,090
Orange River Colony—						
Vereeniging	5.67	23.21	50.94	18.25	1.94	8,950
Vereeniging	5.40	22.48	50.80	19.95	1.26	9,320
Transvaal—						
Springs	3.12	24.94	54.33	16.27	1.45	10,980
Springs	4.59	21.76	52.50	21.5	2.00	9,030
Middleburg	1.37	24.47	51.50	17.20	5.46	9,700
Middleburg	2.38	35.55	60.71	11.46	0.53	12,200
Middleburg	2.22	25.83	57.19	14.76	0.53	11,720
Middleburg	0.41	21.14	67.61	10.84	0.74	13,160
Middleburg	1.59	21.93	60.60	14.83	1.05	10,920
Middleburg	1.95	28.45	58.65	10.95	0.38	11,940
Middleburg	2.05	24.10	60.35	13.50	0.43	11,940
Natal—						
Newcastle	...	19.80	68.88	9.95	1.73	12,490
Newcastle	...	23.56	64.16	10.05	1.38	13,750
Newcastle	1.60	29.10	20.90	10.65	1.50	13,530

The coal measures are usually reached through shafts or, frequently, inclines. The beds are usually fairly level, and an incline driven at an angle of 20 deg. or more reaches most of the measures at a reasonable distance. In this slope either a conveyor or an endless-rope haulage is installed. With the first method, dumping is done underground, while with the latter the cars are hauled up in the usual manner.

This system has at least two important advantages: It dispenses with the necessity of an engineman, which in the case of the endless haul is a white engineman, and secondly, it provides an incline, which is safer than a shaft. Slopes are typical of Transvaal practice where conditions are suitable, but in Natal, with deeper seams, shafts are more common. Extraction is almost invariably by the room-and-pillar method, with small pillars and large rooms. The results of the working cannot be called economical, inasmuch as the percentage of round coal produced is low. The following figures represent an average of what is the usual standard attained by some of the larger companies:

	In the Transvaal	In Natal
Round	43% to 44%	65%
Nut	17% to 16%	15%
Pea and duff	14% to 16%	7%
Pickings	26% to 24%	13%

As there is practically no sale for pea, duff or pickings, except a small amount to the power companies at a price around 12c. per ton, the majority of the companies are compelled to dump this material, and as most of the coals contain a fair proportion of sulphur, spontaneous combustion takes place as soon as the heap reaches about 10 ft. in height. The result is that nearly all these coalbanks are on fire and may be seen burning for miles across the veldt.

As the coal district is mainly in a woodless country, the mines have either to import the needed timber or else grow their own supplies, but until the timber growth is sufficient for mining purposes (from 5 to 7 years) present supplies must be bought at a high figure. Tree planting is now being done by many of the collieries.

South Africa Wastes Its Natural Resources

Conservation of the fuel supplies is a subject that has been discussed in the abstract, but like all developing countries South Africa is prodigal of its native resources. In one way this is easily understood, as the country is vast and in many parts practically unexplored; consequently the store of coal appears inexhaustible.

The carboniferous rocks in which the coal beds are found stretch from Laingsburg in Cape Colony in a northeasterly direction 750 mi. to Middleburg in the Transvaal and at right-angles to this from Kimberley to Umtata in Cape Colony, a distance of 350 mi. This gives for the carboniferous system a total area of about 262,000 sq.mi. It is as yet unknown how much of this area actually contains workable coal beds—undoubtedly much of it is barren; but coal is at present being operated in four distinct regions—the Natal coal field, the Transvaal coal field (Middleburg), the Orange Free State area (Vereeniging) and the Cape Colony area (Stormberg). There is a distance between the Natal and the Cape areas of 350 mi.

Last year the Geological Survey of the Union of South Africa gave the following rough estimate of the coal resources:

District	Area, Sq.Mi.	Average Thickness, Ft.	Total Tonnage
Transvaal	5,000	6	36,000,000,000
Natal	1,000	7	9,400,000,000
Zululand	1,250	4	6,000,000,000
Orange Free State, Cape Basuto-land, Zwasiland	1,000	4	4,800,000,000
Total			56,200,000,000

Since the location of new coal fields has little attraction under present conditions for either private or collective enterprise or the state, it follows that as there is no incentive to exploration the foregoing is a conservative

estimate and is only applicable to those areas in which actual operations are at present being carried on. Further, it is to be remembered that most of this coal is easily mined, as capital expenditures are low and working-costs even less in their proper relations. Mining-costs, as may be expected, are reasonable and may be held to average roughly for the Transvaal 48c. per ton and for Natal 70c. per ton.

Owing to the excessive competition of past years, through easy production, the price of coal to the consumer is as low as anywhere in the world. For many years this has averaged much as follows, taking into allowance various fluctuations: Round coal, $1.16; pea, 12c.; nut, 70c.—all at the mine mouth, and averaging per ton at the mine possibly 67c. in the Transvaal.

Mines and Railways Use Most of the Coal

Of the coal sold the larger quantity is consigned to the mines and railways on a well-defined calorific basis, while the remainder goes to the householder trade of the few cities—Johannesburg, Pretoria, Lourenço Marquez, Pietermaritzburg and Durban. The total internal (Transvaal) consumption is limited to around 5,000,000 tons annually, little enough to feed an ever-growing number of mines, while the total for the Union approximates 7,500,000 tons. Natal has practically no internal consumption and caters almost entirely to a bunker trade at Durban.

With the easy operation of the coal seams, the price of coal was at first only kept from going lower by the fact that railway routes are few and freight rates high.

Latterly and with various vicissitudes, coöperative bodies—the Transvaal Coal Owners' Association and the Natal Coal Owners' Association—have come into and have gone out of existence. The final success of such a body is always problematical, as their troubles are many in a land where coal mines are easily opened. Such an association is usually a corporate body in which the various companies hold stock. They work along the line of pooling the output to regulate the price and conserving the market for the benefit of the collieries concerned.

Coal is sold to these associations by the mines at fixed prices and a certain stipulated tonnage worked, the total trade being divided among the companies concerned pro rata. Any increase in tonnage sold by the association is also divided, but any increase in price goes to the association's benefit and returns to the mines as dividends on stock. Such a combine, as it has been well named, has been of great service.

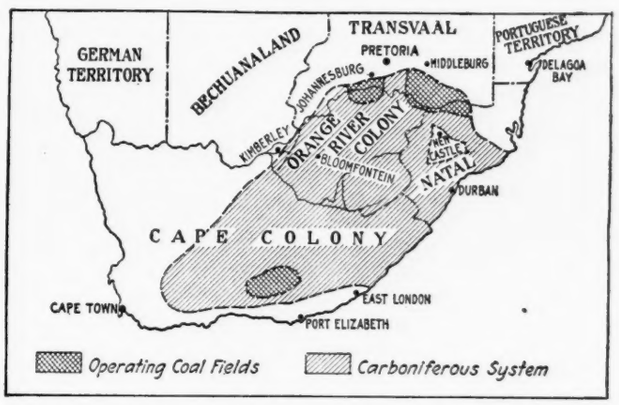
It is a common feature, however, to find within a year or two other operators appearing in the field and demanding their share of the "turnover," and so rifts within the lute develop that may ultimately lead to the dissolution of the association, which then possibly remains in abeyance until matters become so bad as to compel the formation of a fresh combine. This has occurred several times in the history of the Natal and Transvaal fields.

A Combine Has Been an Accomplished Fact

Fact it is important to note that such a combine comprising a great number of scattered collieries, with many conflicting interests (capital stock in South African, French, German and English hands; control in some cases held by steamship lines, gold-mining companies, diamond companies, independent companies; some concerns 100 mi. nearer the market than others—conditions many and varied), distributed over the huge coal fields in the Natal and Transvaal, has been actually accomplished and operated successfully, and admittedly to the profit of the participants in the pool. Recently there has been discussion of a combine of interests between the Transvaal and Natal, and such a combine, when it takes place, as it probably will, will actually represent an agreement among all the South African coal-mining interests.

Believers in the future of South Africa are great advocates of the development of an export coal trade. The facts that there are such large known reserves of fuel, easily and cheaply worked, and that the internal industrial market—which with the exception of a few cities is mainly the consumption in the gold mines—is not equal to absorbing the surplus production, have compelled a serious study of the question and aroused interest all over the Union.

Export trade for the Transvaal must be conducted through the port of Delagoa Bay, in Portuguese territory, 270 mi. away. Until recently this has been out of the question, as that port had no means of handling an



THE AREA OCCUPIED BY CARBONIFEROUS ROCKS IN THE UNION OF SOUTH AFRICA

export trade of any dimensions. There now exists, however, a fair coaling plant at this point, and the output of the Transvaal collieries to an oversea market has been going steadily up.

The coal finds a market in India, against the native-produced fuel, in Ceylon and Madagascar, against Japanese, Australian and British coals; and now that the possibilities of an export trade in this direction have been demonstrated as profitable under present freights and costs, efforts for its increase through increased facilities and closer coöperation may be expected.

The Natal coals find a market through the port of Durban, 240 mi. from the coal fields, and while the output approximates only 3,000,000 tons, by far the greatest quantity (80 per cent.) is taken as bunker fuel. There has been in the past little export trade carried on. Natal coal also finds its way to the Capetown market in competition with Welsh and English coals, but the price obtained is less than for the Welsh coal owing to a lower calorific value. Welsh coal sells at $5.70 f.o.b. Capetown, while Natal coal sells at $4.60.

As already hinted, an export coal trade is a "South African dream." The proposal has been made more than once, and seriously considered within the last few years, that given a community of interest between the countries

comprising the Union, Natal coal could find a market on the west coast of Africa and the east coast of South America, leaving the eastern market to the Transvaal.

It was calculated that the coal cost on board at Durban per ton would be from $2.60 to $2.90, and that given reasonable freight rates, this would enable it to compete with the coal at present enjoying the markets above mentioned. As the South African railways are government owned, state aid was to be secured in obtaining lower coal-carrying rates from the coal fields in Natal to the port itself.

There Are No Return Freights

The South American market has looked good to South African eyes for many years, but there is a difficulty which centers round the question of return freights. South Africa and South America are two countries similar in situation, in climatic conditions and in industrial and agricultural progress. The result is that neither country produces any material nor has any industry the product of which the other country needs. South America can send to South Africa nothing in exchange as freight for the returning coal bottoms.

To obviate this difficulty a round trip of the vessels engaged in the trade has been suggested—South Africa to South America, South America to England, and from England back again to South Africa. This is feasible, but on the other hand it is hardly conceivable that the movement of cargoes will so coincide as to allow of the steady invasion of a coal market all the year round.

The relative distance of the ports of coal shipment from, say, Montevideo, is approximately as follows: Durban to Montevideo, 4,000 mi.; Hampton Roads to Montevideo, 5,500 mi.; Swansea to Montevideo, 5,900 mi. mi.

Thus freight rates favor the Union on the distance. Calculating the cost of the coal on board at Montevideo, on the basis of freight rates plus cost delivered at shipping point, the relative selling prices would appear as follows:

	Welsh Coal	Virginia Coal	Newcastle Steam	Natal
Price at point of shipment	$4.50	$2.80	$3.28	$2.95
Freight	3.10	3.60	3.80	2.50
	$7.60	$6.40	$7.08	$5.45

While in no sense can these figures be taken as actually comparative, since freight rates and prices are subject at all times (and especially now) to considerable fluctuations, nevertheless they seem to show that South Africa's claim of being able to reach the South American market at competitive prices is not unjustified.

A Résumé of Conditions

It would therefore appear that, given strong combination, backed by the state, and reduced rail rates, South Africa would have a more than reasonable chance of obtaining a considerable share of the South American trade. Further, a South Africa combine, determined on expansion through export trade, would be a powerful factor in obtaining and forcing the freight reductions necessary, both on the sea and overland. The completion of plants at the coaling ports is a step on the way to the trade desired.

Again, the number of collieries catering under this system to an export trade would have the advantage of assuring quick loading, prompt dispatch and, above all, uniform, well-graded quality. There is nothing to prevent such an association, while there is on the other hand the example of a successful precedent.

The coal trade generally is gradually being forced into the position of having nothing to lose and everything to gain by the consummation of the many-times-suggested combine. The special features brought forward have been:

(a) The pooling of all internal trade and the hoped-for export business.

(b) The allocation, according to production, of the Indian and East African coast trade to the Transvaal mines through Delagoa Bay.

(c) The allocation of the Capetown seaboard, West African coast and South American coast to the Natal mines through Durban.

(d) The construction of strategic railway lines for the transport of export coal and the reduction of freights to the sea from the mines.

(e) The construction of coaling piers at the two ports and the organizing of a shipping fleet.

In a few words, South Africa's feeling is that the Coal Owners' Association, the government and the railways have "a unique and obvious opportunity to promote industrial expansion at the expense of oversea competition." The Union produces cheap, easily worked coal, of which there are great reserve areas, while every problem within its borders can be overcome. The existing mines are equipped for producing approximately 2,000,000 tons annually above their present output, and with an export outlet available production from fresh areas would be prompt.

Only one difficulty bars the way: South Africa is in the same position as the United States in that she has not the vessels with which to carry on her coal trade and has less chance of obtaining them owing to the dearth of return cargoes. It is true that the average quality of the coal is lower than that of the fuels with which it will have to compete, and the export range of any coal depends in these days strictly upon its value as a fuel. But seemingly South Africa has a margin to come and go on in this respect.

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Coal in the Russian Caucasus

The coal industry of the Caucasus is in its infancy, but is capable of considerable development. Traces of coal are found in many of the governments of this district. Perhaps the most important known deposit is at Sosooze, in the government of Kars. This deposit covers an area of more than 300 sq.mi., and the coal is reported to be of uniform quality and high grade. Serious prospecting work was started only in 1914. The concessionaire has also been granted a concession for the construction of 60 mi. of railroad from Sosooze to Kars.

The retail price of local coal at Tiflis averaged during the year $9.58 per ton, and the price of Donetz coal at Tiflis in 1914 ran from $22.35 to $23.95 per ton. During December, however, prices rose by 50 per cent. The output of coal in the Donetz Basin increased during 1914 by 19 per cent. and of anthracite by 25 per cent. The consumption of coal by local railroads increased by 22 per cent. Of foreign coal 445,171 tons was imported into Russia for the use of the railroads, duty free, during the first six months of 1914.

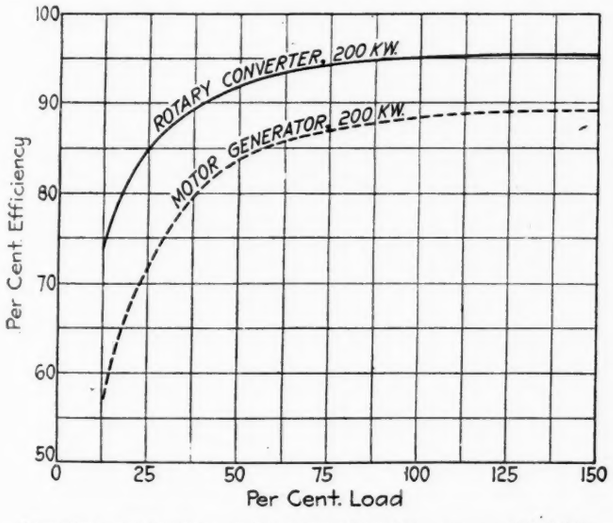
The Rotary in Mine Work

By C. M. Means*

SYNOPSIS—Of the two methods available for converting alternating into direct current the rotary converter of recent design possesses some important advantages over the motor-generator set. Among these are greater simplicity and greater overload capacity.

Direct current is eminently suited for the operation of certain appliances used in the production of coal, while alternating current is the better medium for power transmission. Up to this time, haulage locomotives arranged for alternating current have made little progress, and a successful mining locomotive of this type is not yet in sight. Mining machines are now being built with alternating-current motors, but they have a limited application because of the inherent characteristics of the induction motor.

In small mines where no haulage is contemplated it may be advisable to use mining machines equipped with



CURVES SHOWING THE EFFICIENCY OF A MOTOR-GENERATOR AND A ROTARY CONVERTER

induction motors, but where haulage is already installed or its future use is possible, it is advisable to consider only machines operated with direct-current motors. Other equipment such as pumps and hoists can be run successfully with alternating current applied at the transmission voltage, or by the use of transformers such voltage can be secured as may be most desirable.

The potential of direct current is limited to 650 volts, and in the interest of safety it is often desirable to make the limit 300 volts. For transmission purposes underground, alternating current at much higher pressures may be used, the exact voltage being dependent upon the length of the distribution lines and the amount of power to be transmitted.

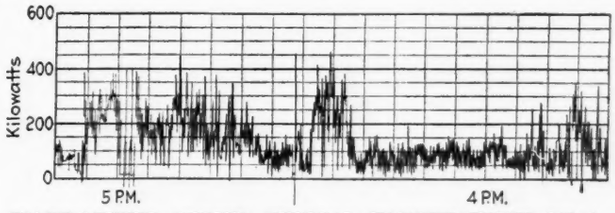
In order to get proper results in a large mine, it is necessary to transmit the power in the form of alternating current, converting it to direct current for the operation of locomotives, mining machines, small pumps, etc.

*Randolph-Means Co., Pittsburgh, Penn.

To accomplish this conversion, we have our choice between the rotary converter and the motor-generator set. In recent years the motor-generator set has been so improved that it is now a rugged and reliable piece of apparatus and has been applied extensively in many districts where alternating current is available. Recent developments in the rotary converter, however, have not only made this device a competitor of the motor-generator set, but present indications point to its adoption in mining work in preference to the other machine.

Machines used for converting alternating into direct current are rated on their ability to carry a constant load rather than to take care of the actual operating cycle of a mine. A mining load is extremely unsteady, and machinery adapted to carrying wide fluctuations should be selected for the conditions existing in the average mine.

In the case of a motor-generator set, the capacity of the machine is limited by the ability of the motor to keep in step or that of the generator to commutate at overloads. The usual practice is to arrange the motor so that it will, under proper conditions, carry well up to 100 per cent. overload, but this implies a normal alternating-



WATT-METER CURVE: TYPICAL FLUCTUATIONS OF A MINING LOAD ARE SHOWN

current voltage which cannot always be maintained. Manufacturers customarily design the direct-current unit to carry 75 to 100 per cent. momentary overload without serious flashing at the brushes.

Momentary Overload of 200 Per Cent. Is Possible

In the case of a rotary converter, the only limiting feature of short overloads is that of commutation, and in a properly designed machine it should be possible to carry 200 per cent. overload for short periods of time.

Inasmuch as the overloads are of short duration, no undue heating occurs in the winding of the rotary or of the transformers used in connection with the outfit.

The accompanying chart shows a typical direct-current mining load. In actual practice it was found necessary to use two 150-kw. motor-generator sets to handle this load, yet it could easily have been carried by one 200-kw. rotary converter of proper design.

In certain cases it is possible to arrange the work so as to reduce overloads, but in general an arrangement that would give any material overload reduction would so affect the operation of the mine as to result in decreased output with increased cost. This implies that the load ordinarily encountered in mine work is a fixed condition and equipment must be designed to handle a demand fluctuating between wide limits with a low average value as compared to the maximum. This condition the rotary is eminently fitted to meet.

The first cost of a rotary converter, together with transformers, designed for a certain continuous load, may be slightly higher than that of a motor-generator set, but the cost of a rotary to handle the average mining load should be lower than that of a motor-generator set to perform a like cycle of work. This is because of its greater overload capacity. The reliability of operation favors the rotary converter of recent design as compared to the motor-generator set. Transformers are extremely reliable in every way, and the rotary has a low-voltage field and armature winding and is one machine.

The synchronous motor of a motor-generator set usually has a high-voltage winding and a revolving field that must be insulated for high induced potentials. The field and armature winding on the direct-current end, in the case of 500-volt machines, must be provided with an exciter. Thus we have two complete machines in the case of 250 volts and three in the case of 500 volts.

The efficiency of the rotary together with its transformers is high, reference to the curves showing just what this value is. When the load under which these machines operate is considered, it is apparent that the saving in power in a rotary is an important item and cannot be ignored. The actual operating efficiency of a motor-generator set on a mining load will be around 70 per cent. or lower, while that of a rotary with its transformers should be 80 per cent. or above.

It is possible to secure considerable overcompounding on the direct-current end of a motor-generator set, while a rotary will give a flat voltage or a very small amount of overcompounding. The direct-current voltage of a motor-generator set is a fixed quantity and cannot be varied beyond the limits fixed by its design. The voltage of a rotary can be varied by changing transformer taps.

A flat voltage is exactly what is required when a substation is located properly with respect to its work. Thus in general, the regulation of the direct-current voltage of a rotary is better suited to the work than a voltage that fluctuates with the load.

The rotary converter operates at about unity power factor, which is ideal so far as this part of the load is concerned. If it is desirable to correct the power factor for other apparatus on the line, a proper condenser should be used and so located as to furnish the maximum amount of effective correction rather than depend on synchronous motor-generator sets placed without regard to location for proper correction of power factor and operated without consideration of the amount of correction required at different times.

A Cold Winter Coming?

The sale of what are known as fire goods—that is, stoves and furnishings, pokers, tongs, coalhods, stove boards and the like—is always a gamble with the weather so far as the merchants in these lines are concerned. Both the wholesaler and the retailer must place their orders far in advance if they are to have the goods when needed.

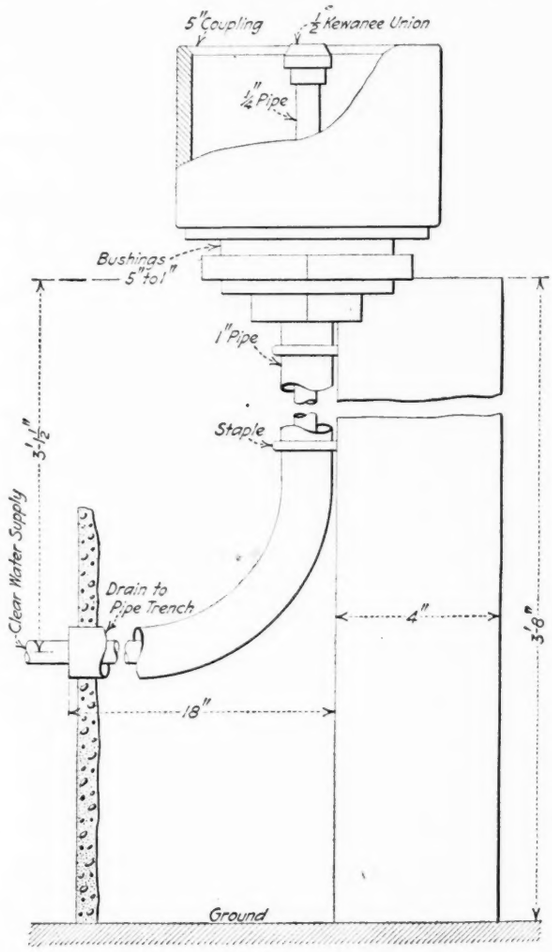
The volume of business depends largely upon two factors—the amount of goods carried over by the retailers from the previous season and the nature of the weather in November and early in December. An early cold snap, especially if severe and prolonged, means a great volume of buying by the householder. If, however, the cold weather be delayed until after Christmas, it apparently has no effect whatever upon business.

After Christmas, be the cold ever so pronounced, the consumer evidently makes up his mind to get along with such heating apparatus as he has for the remainder of the season rather than buy new ones. This year the whole body of the trade is banking on a cold winter, judging from the volume of its buying. This judgment has the merit of consistency, since the past three winters have been rather mild and in the general law of averages a cold season is due.—New York *Times*.

Drinking Fountain for Mine

By D. E. Charlton*

The fountain illustrated herewith is simple in construction, applicable for underground or surface use and may be made from material generally on hand at the mine, says *The Engineering and Mining Journal*. The cup is made of a 5-in. coupling bushed at the lower



A SIMPLE DRINKING FOUNTAIN

end and reduced to connect with a 1-in. pipe which acts as a drain, taking care of the overflow of water. The fresh water enters through the ¼-in. pipe that passes through the 1-in. pipe. The male end of a Keewanee union will serve as a suitable nozzle. The apparatus is supported and held to a wooden post by means of staples.

*Mining engineer, Virginia, Minn.

Simple Cement Testing

By E. H. Bonnet*

SYNOPSIS—Most large consumers of cement employ elaborate tests on this material before using it. This is not generally the case with coal companies. Two tests, one with the thumbnail and the other with a pailful of boiling water, may go far toward determining the adaptability of any shipment of cement for the purpose intended.

Concrete is being used more and more extensively every day. It has long been employed in building construction, but it is only within comparatively recent years that it has been much used around mines. The development of its use in colliery practice has, however, been rapid; and it is now employed in a variety of ways, such as in building bridges, houses, tipples and breakers, as well as to a large extent for engine, fan and pump foundations, brattices, overcasts, entry and tunnel linings and in numerous other capacities where the quantity used at any one time is small, but which in the aggregate constitutes a considerable amount.

The principal constituent of concrete is cement—not in quantity, but in importance. It may seem needless to say that not all cement is good cement. It is, however, not like a great many other materials the quality of which can be determined by sight inspection. A bad cement appears the same as a good one. An adequate test is important, since the uses to which cement or concrete is generally put are such that a failure would entail a large loss.

Most architects, large building contractors and the larger railroads test all the cement they use, but it has been my experience that little of this material used in and around mines is tested. This may be owing in large measure to the cost of having the cement tested and also because of the delay in waiting for the chemist's report. Probably also it arises from a lack of knowledge on the part of mine managers and engineers concerning the importance of testing. To them cement is cement.

I have in mind one coal company which maintains a large and efficient corps of chemists for testing coal, oil and mine air, yet still in an important and expensive structure it used 5,000 bbl. of cement without testing. I have also known of shipments of cement which were rejected by one purchaser, being sent to and accepted by other parties who did not test the cement they used.

The American Society for Testing Materials has formulated some elaborate tests for cement, and all such material should be bought with the specification that it must pass these tests. There are a few simple trials, however, to which cement may be subjected that anyone can apply with simple apparatus and that for all ordinary purposes give dependable results.

Method of Procedure

First a sample of the cement must be secured. The taking of this sample depends largely on the quantity of cement to be tested, but in most cases a small amount should be taken from every tenth barrel or sack in the shipment. These samples should then be mixed together, the total quantity taken being about 10 lb. This should then be thoroughly mixed and about ½ lb. taken for the test.

This should be mixed with water on a piece of glass about 18 in. square and worked, just as bread is kneaded, into a paste of about the consistency of putty. This kneading should take about 5 min. If after kneading, the paste is worked into a ball and dropped a distance of about 2 ft. to the mixing board and water spatters out, the cement is too wet, while if the ball cracks it is too dry. The proper amount of water can be determined with a little practice. It will vary somewhat with different cements, but will ordinarily run close to 25 per cent. of the amount of cement used.

This paste is then made into two pats or mud pies on pieces of glass 4 in. square, the pats being 3 in. in diameter, about ½ in. thick in the center, and running down to thin edges. The pats are then put in a moisture box. This may be easily made. It is simply a box with a fairly tight lid, capable of holding water, with a tray to hold the pats above the liquid. If no moisture box is at hand, the pats can be kept moist by wrapping them in damp cloths.

One pat is from time to time tested for setting. This is done by using the thumbnail. When an impression can no longer be made with the nail, the pat is said to have set. This set must not take place in less than 1 hr. or in more than 10 hr. in order for the cement to pass the test. The other pat is kept in the moisture box for 24 hr., at the end of which time it is placed in a bucket of water. This is then heated and allowed to boil for 4 hr., at the end of which time the pat is allowed to cool slowly and in order to pass the test must show no signs of checking or cracking.

It will be noted that one pat can be used for both of the tests. However, less than ½ lb. of cement should not be used, as any smaller quantity is difficult to handle. A larger quantity than this can be used, if found convenient, and the excess thrown away.

This boil test is one of those used by the chemists and is called the constancy-of-volume test. A cement may pass all the other tests and when used make a fine, firm piece of concrete and still in a number of years begin to disintegrate. It is to determine this quality of the cement that this test is employed. Most of the standard brands of portland cement of today will pass the other tests. Some manufacturers, however, in order to make a cement of great strength mix in an excess of free lime. This adds strength to the cement, but when this class of material is used, the concrete is likely to disintegrate and crumble away after a few years. This variety of cement will not pass the boil test.

In somewhat over 200 samples which I have tested in the last year none have failed to pass the other tests, with one exception, which was too fast in setting. Sixteen samples failed to pass the boil test, however, and were rejected.

A cement which fails to pass this boil test may after aging for 30 days pass it and can then be accepted. A fresh sample must be taken for this test. I believe,

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however, that the time for aging is before the cement leaves the factory, and have consequently always rejected this cement immediately. The purchaser is paying for a finished product and should not be expected to store and age a material when this is one of the processes of manufacture.

It will be seen that the only apparatus required in applying these tests consists of several pieces of glass and a bucket, together with some method of applying heat thereto. A glass cutter is convenient with which to cut the small pieces of glass used for the pats, as is also a small pointing trowel with which to work the material on the glasses. The outfit costs less than a dollar.

I might add in closing that I know of some railroad companies that depend almost entirely on this boil test. I also know of a bridge built over the Ohio River, all of the cement used on which was tested in this manner in the engineer's room at the hotel. It is advisable, however, when building any structure involving the outlay of a considerable amount of money that the cement be tested by one who is properly equipped and is familiar with testing this class of material.

Extracts from a Superintendent's Diary

Constantly and in various ways we learn that the outside world has a very poor opinion of our people and their standing in society.

Sometimes it is by word of mouth from strangers passing through, sometimes through letters received in protest of things we have done or are about to do, as reported to the world at large by some metropolitan paper, or again through the actions of people who are called into our camp unexpectedly by business or social necessity.

During the past week the tragic death of one of our citizens brought into our camp a very estimable lady from a distant city, and through her coming we were made to realize how prejudice against mining folk may affect human happiness.

Most of the circumstances in this particular case have only become known to us during the week, notwithstanding the fact that Arnold Cross and his family had lived in our camp for several years. Arnold Cross is the young man who was buried this week, and the lady that came here as a stranger, and by her coming brought out all of the facts, was Arnold's mother.

Ten years ago Arnold Cross, then a young man just out of college, accepted a position as school teacher in a Pennsylvania mining-camp village. Two years later he fell in love with a miner's daughter and married her.

Arnold's mother was a widow of some means living in Boston. She had never visited a mining camp, but with the prejudice so characteristic of city folk she assumed that her son had brought disgrace upon the family name—a name which had been prominent in Massachusetts history for several generations—and true to the traditions of her forefathers she disinherited the son.

In a few years Arnold tired of teaching and decided to learn the mining business.

His father-in-law, a thrifty coal digger, gave him the opportunity by taking him in as a "buddy." Within a few months his earnings were larger than the salary he had received as a teacher, and he never regretted the step.

After getting practical experience, he made up his mind to prepare himself for the mine foreman's examination, and at the next session of the examining board he passed with a high mark; but the length of his experience would not permit him to obtain a certificate, so he came to our state, where the requirements were not so severe.

He accepted a position at our camp as assistant foreman and was in line for promotion to a foreman's job with the next vacancy.

Marrying a miner's daughter was bad enough from his mother's standpoint, but accepting work in the mines was past understanding, and from the time he went to work in the mines his mother even refused to correspond with him.

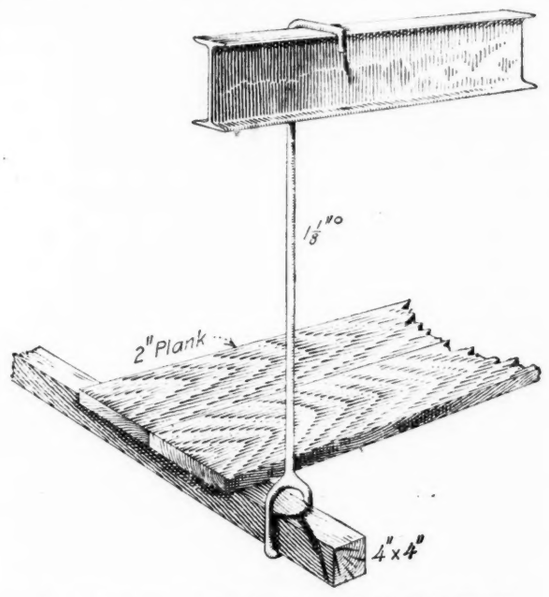
One of those unaccountable explosions of a small gas pocket where gas was never expected snuffed out Arnold's life last week, and his mother's arrival in our camp was in answer to a telegram announcing his death.

We have had the unhappy lady as a guest at our house during her entire visit, and it fell to my lot to make her realize that her son had followed an honorable occupation, had acquitted himself with credit in that occupation and left behind a wife loved and respected by everyone in our village and of whom any family might well be proud.

That I did my work well is evidenced by the fact that Arnold's wife is to go to Boston with the mother to make her home there for an indefinite period.

Staging Hangers for Riveters on Structural Work

Slinging a staging for riveters on structural ironwork, says *The Engineering and Mining Journal,* is too often done with ropes, which for this purpose are both unsatisfactory and unsafe. A cheap and convenient hanger, shown in the accompanying sketch, is made of 1⅛-in. round iron, with a large eye at the lower end and a hook



STAGING FOR STRUCTURAL IRONWORKERS

at the upper end to hook over the I-beams or other structural members. Through the eye is inserted a 4x4 timber on top of which 2-in. planks are laid. The cost of these hangers is small, they are light and can be handled easily, and they are not liable to destruction.

Some Technical Aspects of the New York Specifications

By Reginald Trautschold*

SYNOPSIS—An analysis of the causes leading up to the reason for the adoption of the more rigid specifications. The requirements of the new proposals can only result in higher bids to protect against penalties. Methods of sampling and analysis are open to criticism.

The revised specifications for the purchase of coal by the various departments of New York City are truly remarkable in their impracticability, their radicalism and their injustice to the dealers, and this in spite of the fact that they are the result of months of work on the part of a special committee representing the largest coal-using departments, assisted by the Bureau of Standards of the Board of Estimate and Apportionment. They were taken up because the rather drastic specifications adopted some four years ago failed to satisfactorily protect the city's interest.

The city discovered that under the old specifications it was paying more for coal and receiving consignments of a poorer quality than certain individuals and private corporations. A more careful investigation by the committee might have traced the trouble to failure to secure widely competitive bidding between reputable dealers owing to the severity of the old specifications. Instead of which, though the committee rightfully came to the conclusion that the fault lay with the old specifications, they proceeded to make these still more exacting, apparently hoping to lower the cost of coal by demanding that it meet much harder conditions.

Price Governed by Demand

The price of coal, like that of any other commodity, is governed by the law of supply and demand, and if the city has paid higher prices and received poorer coal than others, it has been because this incontrovertible law has been further complicated by the insistence of the right of selection. Coal dealers are not necessarily less honest than other merchants and if not burdened by too many conditions will serve the city as well as they do other customers. The value of the coal they have for sale is fixed by the general demand, and if this is interfered with by the insistence of the right of selection and condemnation, it is only to be expected that a higher price will be demanded or a poorer quality supplied.

To return to a consideration of the new specifications, the most glaring handicaps have been imposed on the steam sizes of anthracite, such coals being those purchased most extensively by the city.

The specifications for broken down to pea have not been altered so much as to cause any very great injustice. It is in connection with the smaller washery sizes of anthracite that the drastic changes occur. In the first place, the heating and ash-contents requirements of the buckwheats have been reversed—No. 3 being ranked first, then No. 2, and No. 1, which has always been considered one of the best anthracite steam coals, listed last, with requirements similar to those for buckwheat No. 2 under the new specifications.[1] The heating value and the ash contents required of buckwheat No. 3 are the same as those for pea coal, while the specifications for buckwheat No. 1 in respect to ash, volatile, sulphur and heating value remain the same as under the old specifications, the only change being an increase of 1 per cent. in the allowable moisture.

How the arbitrary decision of the city that the buckwheat No. 3 should rank as high as pea in heating value and as low in ash content, while buckwheat No. 1 may possess nearly 1⅔ per cent. less heating value and contain 12½ per cent. more ash can alter the logical ranking of the buckwheats is hard to see. Such arrangement is much to be desired, and if it can be brought about by the new specifications, the committee will receive the unqualified indorsement of all coal men.

Penalties and Bonuses

Coal failing to meet the new specifications is penalized most severely; deductions in the gross amount of coal paid for are made both for ash content greater than the very low allowable percentages permitted and for any decrease in heating value below the specified requirements. The presence of ash being directly measured by a decrease in heating value, it is actually penalized twice—once for its presence and again for its effect upon the value of the fuel.

The penalty for ash in excess of that allowed under the specifications is a reduction of 1 per cent. in the gross weight of the coal for each 1-per cent. increase in ash up to a maximum of 2 per cent. more than allowed under the specifications. Any further increase is taxed 2 per cent. for each additional 1 per cent. of ash.

Failure of the coal to possess the heating value demanded is penalized by a reduction of 1 per cent. in the gross weight of coal for each 100 B.t.u. for the first 300 B.t.u.'s deficiency, after which the penalty is increased to 2 per cent. for each additional 100 B.t.u.

A lamentably weak attempt to equalize the extremely severe penalties is made in the way of bonuses. These are proposed for deliveries of coal superior to that demanded, but are simply to be remissions of penalties imposed on other deliveries under the same contract at the same unit price. Such remissions are to be credited at the rate of 1 per cent. for each 100 B.t.u. in excess of the number called for in the specifications. No bonus is offered for a reduction in the allowable ash content, although any excess carries a double penalty, nor are the remissions to be credited against any penalties imposed at the rate of 2 per cent.

The unfairness of the penalties and the inequity of the remissions may be better shown by means of an assumed transaction. For instance, a consignment of buckwheat

*39 Charles St., New York City.

[1]For tables showing required analysis, see Vol. 8, p. 132.

No. 3 might be required. According to the new specifications, such a coal should show 12,400 B.t.u. per lb. and contain not more than 16 per cent. ash. It may safely be assumed that such coal is of a high grade that can be obtained at least occasionally. It is not at all unlikely that the analysis of the sample taken from a delivery would show the presence of 19 per cent. ash, which is the allowable percentage of ash for this grade coal under the old specifications but an excess of 3 per cent. under the new regulations and subject to a total penalty tax of 4 per cent.—1 per cent. for each of the two first 1-per cent. excesses and 2 per cent. for the third 1-per cent. excess. Assuming that the analysis was really typical of the mass of coal furnished on this specific delivery—a condition that would be problematic, but which should be admitted for the sake of the argument—the presence of 3 per cent. excess ash would markedly reduce the heating value of the coal.

Ash Reduces Heating Value

It is a fact well-substantiated by practice and confirmed by numerous authentic tests that each 1 per cent. of ash contained in coal of this grade reduces its heating value by 1¼ or 1⅓ per cent. If buckwheat No. 3 containing 16 per cent. of ash possesses a heating value of 12,400 B.t.u. per lb., the presence of 19 per cent. ash would reduce the heating value approximately 500 B.t.u., other constituents of the coal remaining about the same and assuming the greater loss owing to the presence of the excess ash ($12{,}400 \times 0.01\frac{1}{3} \times 3 = 496$ B.t.u.). A lack of 500 B.t.u. per lb. would entail a penalty of 1 per cent. for each 100 of the first 300 B.t.u. and 2 per cent. for each of the other 100 B.t.u., making a total penalty owing to the presence of excess ash of 7 per cent.

The total penalty imposed on the delivery would then be 11 per cent.—4 per cent. for the presence of the excess ash and 7 per cent. for its effect. A remission of 5 per cent. would be all that would be possible for the dealer to secure, no matter how superior might be the coal delivered on the balance of the consignment at the same unit price, for the 2-per cent. penalties would not be subject to any remissions.

Competition in the sale of coal has driven the ordinarily obtainable profit down to about 10c. a ton. With buckwheat No. 3 commanding a price of $3 per ton delivered, this represents an obtainable profit for the dealer, should his coal meet the new city specifications, of 3⅓ per cent. A large portion of the coal delivered by the dealer on his consignment having perforce to bear an unavoidable penalty of 6 per cent., owing to the presence of a little excess ash for which he is not allowed to make recompense by other deliveries of higher-grade coal, it is difficult to see how he can avoid adding at least 10 or 15c. to the price he charges less-exacting customers for the same grade coal.

Such a transaction would not be at all unusual, no exaggerations nor improbable assumptions having been made; so it is extremely difficult to see how New York City or any other customer can benefit by the adoption of any such impractical specifications. Only one result can follow their enforcement, and that is a very decided falling off in the number of competitive bids received and a marked increase in the unit price that the city will be compelled to pay for its coal.

Aggravating still further the injustice imposed by the heavy penalties is the strong probability that the taking of samples for analysis may not be fair and the results shown not typical of the mass of coal. There has been no uniform system or method of sampling coals at the Central Testing Laboratory, or for that matter anywhere else, and remarkably apparent variations in the quality of the coal in the same consignment have resulted. There have been instances of reported variations as great as 1,000 B.t.u. in the heating value of coal in two deliveries made to different parts of the city, both of which were made from the same shipment.

Scientific methods of purchasing commodities have done much to better market conditions and to protect the purchaser from unscrupulous merchants, but so-called "scientific buying" can be overdone. Any such specifications as those proposed to govern the future coal purchases of New York City, if they are supposed to be drawn up along scientific lines, promise nothing but dissatisfaction and a heavy unnecessary expense to the city. If New York City will rely more on the common honesty of the coal dealers, use more common-sense and less misapplied scientific effort, and accept the incontrovertible law of supply and demand, unburdened by any reservations, it will not only fare better, but go farther.

Ballads of a Coal Miner--VIII

Written expressly for Coal Age — By Berton Braley

I AIN'T such a wise guy at dopin' things out,
But one fact I'm reas'nably certain about—
We're wasteful in minin', there isn't a doubt.

We waste at the breaker an' waste in the sump,
We waste in the entry an' waste at the pump,
We waste on the cages an' waste on the dump.

We use too much powder, yet leave too much coal
That's wasted forever—no good to a soul;
We leave it down deep—an' we fill in the hole.

With hurry an' haste as the motive that drives,
We're wasteful of labor an' wasteful of lives,
An' wasteful of tears of the children an' wives.

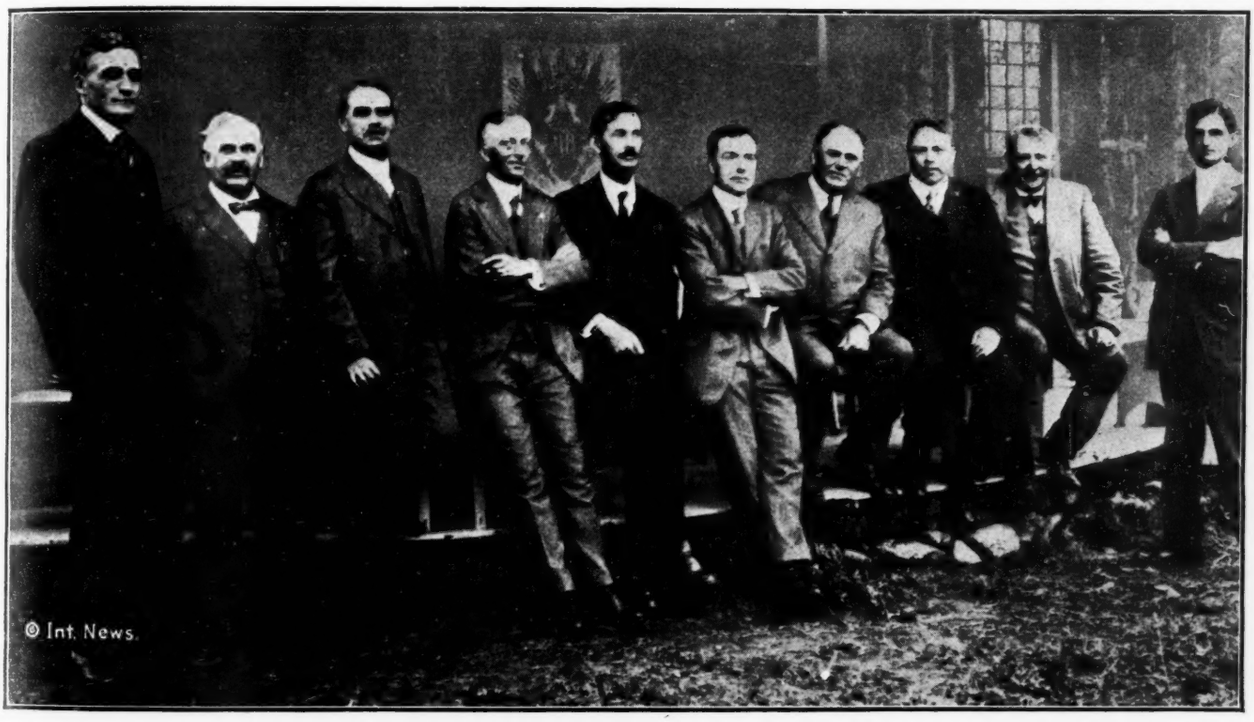
If only we'd see it, if only we'd turn
An' look ourselves over, in time we might learn
To mine with less waste an' more carbon to burn.

For there ain't no use talkin', we waste at the sump,
In tipple an' breaker an' down at the pump;
We waste in the tunnels, the shaft an' the dump.

The Labor Situation

SYNOPSIS—Attempts are being made to unionize Colver, Cambria County, Penn. In Ohio the coal operators are trying to divorce the railroads from the mines. West Virginia operators defend their position. Colorado Fuel miners are well disposed toward the Rockefeller agreement.

On Oct. 14 the 600 men of the Maryd colliery of the J. S. Wentz Coal Co. went on strike because the company refused to recognize their grievance committee. In the Maryd mine gas has compelled the introduction of safety lamps in the middle district gangway, and the miners believe they should be compensated by an increase in yardage for the greater difficulty under which they perform their work. The strike was declared at an end on Oct. 22. The Brockton, Tuscarora and Maryd locals were all interested, and the first two were not satisfied with the way in which the Maryd local handled the situation. The Tuscarora local was then allowed to represent the men. Arthur Kennedy, the mine superintendent, declared that he would not discuss matters with the committee till the men returned to work, as the agreement required that operation should not be suspended. Ultimately the men agreed to work, as in duty bound, pending a settlement.



JOHN D. ROCKEFELLER, JR., AND SOME CITIZENS OF TRINIDAD, COLO., ABOUT TO VISIT FREDERICK MINE

Rockefeller is the man in the center of the group, with crossed legs and arms. E. H. Weitzel, the general manager of the Colorado Fuel and Iron Co., is the individual with the smiling countenance with his back to the window

An Attempt to Unionize a Cambria County Mine

Colver is a large mining town not far from Ebensburg, the county seat of Cambria County. A fine grade of low-volatile coal suited for naval use is produced, and the mines have shown much activity during the recent slack period, owing to the exceptional quality of the coal marketed. Apparently an attempt has been made recently to unionize the mines which have hitherto been nonunion.

Charles O'Neil, the vice-president of district No. 2, which includes all central Pennsylvania, declares that he and other officials of the union, including William Welsh, went to Colver, and while at dinner in the Colver Hotel saw certain state troopers. He states that the troopers were called on one side by the Ebensburg Coal Co. officials and later left the hotel, as if to give the mine guards a free hand.

O'Neil declares that on withdrawing to the hotel office the blinds were drawn and the doors were locked, and several mine guards having been called in, the union men received a severe mauling. Later O'Neil and Welsh, according to the former, were put in an automobile, escorted from the town and told that if they ever came back they might not leave in as good a condition as they entered. O'Neil states that some of his teeth were knocked out. The company officials are said to have declared that the union men were asked to leave town, and on being seized by an officer O'Neil resisted.

The relations between the railroads and the coal companies have always had much to do with the labor situation, and especially is this true in Ohio. Consequently it may be excusable here to introduce an account of the litigation between J. S. Jones and two of the main railroads passing through the coal regions of Ohio.

The present owner of the Sunday Creek coal properties, the Sunday Creek Coal Co., of which J. S. Jones is principal owner, is endeavoring to divorce the railroads from the coal companies as a means of removing discrimination. United States Judges Warrington, Denison and Knappen, sitting as a special Federal District Court Oct. 9, presided at another round of the battle-royal between the Sunday Creek Coal Co., the Hocking Valley Ry. Co., the Toledo & Ohio Central Ry. Co. and the attorneys for the Government. The hearing was really a prolongation of previous hearings when the entire case of the railroad control of large coal lands in Ohio and the purchase of the Sunday Creek Coal Co. holdings by J. S. Jones were aired.

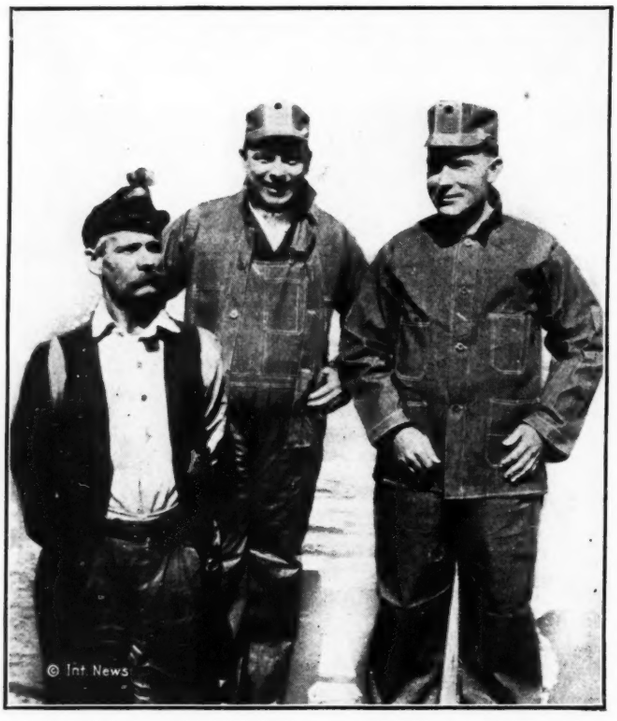
Early in the hearing, government attorneys surprised the court by petitioning it to compel the railway companies to dispose of their interests in all coal companies concerned in the former Government suit. This petition was simply asking the court to enforce its former decree providing for a complete divorcement of the railway and coal companies in the State of Ohio. The stocks and bonds, which the Government attorneys would have the railroads in question sell, consist of certain securities of the Ohio Land and Ry. Co., the Buckeye Coal and Ry. Co., the Boston Coal Dock and Wharf Co. and about $190,000 in the stock of the Kanawha & Hocking Coal and Coke Co., all of which is owned by the Hocking Valley Ry. Co.

The petition also asked that the Toledo & Ohio Central Ry. Co. be ordered to dispose of its stock in the Imperial Coal Co., the National Coal Co. and all interest in certain coal

properties now leased by the Sunday Creek Coal Co. Counsel for the railroad claimed that the National Coal Co. went out of existence in 1912 and that its holdings were taken over by the Imperial Coal Co. He also said that, at the same time, the Imperial Coal Co. reduced its authorized capitalization from $300,000 to $100,000. The attorney, however, admitted that there were certain coal properties owned by the Toledo & Ohio Central Ry. which are under lease to the Sunday Creek Coal Co.

The court also considered a modified contract of sale filed by the Hocking Valley Ry. Co. providing for the disposition of certain lands in Ohio to E. M. Poston. The lands in question are leased to the Sunday Creek Coal Co. The former contract submitted for approval by the court was modified to the extent of having all of the old bonds of the Ohio Land and Ry. Co. and the Buckeye Land and Ry. Co. canceled and new bonds issued in their stead.

This proposition was made providing that J. S. Jones, of the Sunday Creek Coal Co., would enter into a new lease for the mining of a minimum of 500,000 tons yearly at a royalty of 8c. per ton. The railroad company contends that at present no minimum is fixed in the lease and that Mr. Jones is in a



ARDINE DENNISON, MINERS' REPRESENTATIVE; W. L. MACKENZIE KING AND JOHN D. ROCKEFELLER, JR.

position to destroy the value of the coal lands to the stockholders and the bondholders. It is also claimed that the Sunday Creek Coal Co. is not mining the coal in the proper manner. These allegations are followed by a request that the lease to the Sunday Creek Coal Co. be canceled by the court.

West Virginia Fears Freight Increase

West Virginia seems to be a unit in demanding that coal freights shall not be raised. The West Virginia operators feel that many of their advantages which the Ohio operators emphasize in print are offset by many drawbacks. They allege that the longer hours and lower pay of their day hands are balanced by the low efficiency of mountaineer labor. The native workmen of the Appalachian chain eat little and are able to do little, and such food as they do eat is of the least nourishing kind. The domestic science classes in various parts of the state are just as much a reflection of that state of affairs as they are of the practical philanthropy of the operators; for the work was really made necessary by the manner of life of the men. The low tonnages of the West Virginia mines have been similarly credited to the inefficiency of the day hands.

When confronted with the greater output of the miners per man, the operators answer that the coal is far thicker and far easier to dig in West Virginia than in Pennsylvania and that the foreigners, who are better than the mountaineers, are mostly working at the room face and so keep up the efficiency of contract work even though that of day work falls to a deplorable level. Besides it is stated that the tonnage per man in western Pennsylvania is higher than is recorded, because the return, while supposed to be based on the coal produced, is really usually only a record of the coal for which the miners receive pay. Because in the Pittsburgh region the miners are paid only for lump coal passing over a 1¼-in. screen, which is the scale agreement, there should be a large addition to the output of machine coal as recorded if the actual coal produced and shipped is to be obtained. This perhaps would add 33 per cent. to the machine coal and not a little to the hand-picked material.

Consequently the talk of greater efficiency per man is thought to be fallacious. The production per miner per working day in West Virginia in 1912, as given on page 814 of Vol. 7, was 6.84 tons. The same figure for Pennsylvania bituminous was 5.61. West Virginia's recorded output per miner is 22 per cent., therefore higher than Pennsylvania. According to some people, this can be largely accounted for by the difference between the coal actually mined and that which is credited to the miner in Pennsylvania. It would be interesting also to know if in West Virginia the operators are basing their recorded outputs on railroad shipment weights or on the accredited weights of the cars dumped where the coal is not weighed on the tipple.

The miners in Las Animas and Huerfano Counties in Colorado, where much of the plant destroying took place during the great mine strike, seem to be convinced that the agreement offered by the Colorado Fuel and Iron Co. would assure them of desirable working conditions. Tabasco, which is only 3 mi. as the crow flies from the unfortunate town of Ludlow, voted 138 against 25 for the agreement. Berwind, which is 4 mi. from the same junction point, voted 140 against 9 in favor of the Rockefeller-King instrument. Other camps somewhat more remote voted as follows: Rouse, 139 for, 6 against; Lester, 97 for, 9 against; Cameron, 128 for, 0 against; Ideal, 88 for, 0 against; Walsen and Robinson, 276 for, 35 against; Primero, 186 for, 22 against; Morley, 142 for, 28 against; Frederick, 190 for, 18 against; Segundo, 125 for, 15 against; Sopris, 221 for, 63 against; and Gulch, 60 for, 0 against.

Attitude of Union Toward the Agreement

The union, speaking through John R. Lawson, international board member, does not of course approve of this agreement, principally because it leaves the union out. The miners, he says, want not charity but justice, which apparently means that, according to Lawson, they seek not so much fair working conditions as an opportunity to rake up imaginary grievances. If they have fair treatment they surely need not seek to keep in operation those elaborate state-wide and nation-wide organizations by which protest is cultivated when no real grievance is apparent.

Under the plan any real difficulty has ample chance for settlement. The mechanism for protest when perfected invariably leads to protest whether there are any wrongs to be righted or not. This mechanism is not allowed full development in the agreement; for the employees, while they have their private meetings at the camps, meet the employees of other camps only in joint committees with company men.

Robert H. Harlin, Percy Tetlow and James F. Morgan, representing the international executive board of the United Mine Workers, in a statement issued Oct. 2 called attention to the fact that the plan fails to provide for meetings of miners except locally, and all meetings except those which are local are to be attended by an equal number of company officials, "thus eliminating the danger of the collective action that might result if men from several mines met together, free from company influence."

John R. Lawson Is Admitted to $35,000 Bail

On Oct. 7 John R. Lawson was admitted to bail in the sum of $35,000, and this security being promptly furnished by the union he was set at liberty. Apparently the cases against the strikers will be pushed forward to trial. Governor Carlson urges that while lenience might at present restore peace in Colorado, it would only foster trouble in the future by creating the impression that by making a sufficient disturbance the friends of lawbreakers can always induce the withdrawal of prosecutions.

The trial of Nicholas Dormas, a Greek coal miner charged with the deliberate murder by shooting of William Dick during the great mine strike, was commenced Oct. 16. Mr. Dick was conveying the pay of his men by automobile to his Oakview mine west of La Veta when the crime was committed. Owing to the precautions made by Mr. Dick the criminal failed to find the cash secreted in the machine, but though he did not profit by his venture he was successful in escaping to Utah, where, however, he was apprehended later. His accomplice, Vardis Marinos, another Greek, is under indictment for the same offense and his trial will follow.

Editorials

The Loss of Wealth Resulting from Idle Time

It is important that we should lay seriously to heart the wealth lost to the nation by idle time. The hours we deliberately devote to pleasure have their helpfulness, but the time during which we are forced to be idle rests neither body nor mind. At such times we simply drift along without purpose and establish bad habits which leave us permanently weaker.

The yearly average of days of activity in the mines of the United States from 1908 to 1914 was 217. Thus the mining plants averaged only about 72 per cent. of full time. In the year 1914 the number of working days, according to United States Geological Survey report, was only 207 for all coal mines throughout the country.

Unfortunately even this time is not by any means evenly distributed. Some mines are idle a large percentage of the year, while others work with regularity. A few mines in agricultural states work mostly in the winter, and in the summer the men must find farming jobs to keep them busy, though it is doubtful whether many of them do. A miner is not always willing to work under a hot sun. Arkansas and Oklahoma in 1913, for instance, only worked 174 days, or barely 55.5 per cent. of the possible working time.

Perhaps under no circumstances will it be possible to keep coal mining at an even pace throughout the year, but surely it will be possible in the future to do better than in the season just past. Such depression as occurred last year would be helped by a combination embracing all the mine operators, but the conditions of unemployment were nation-wide, and something broader than a combination of mine owners would be necessary as a stabilizer. The whole nation must get together to produce a stability in business which will make steady work in coal mines and in every other form of activity.

It will be necessary for our citizens to learn that a wrong too rapidly righted introduces another wrong, just as an automobile pursuing the wrong path if too suddenly steered into the right direction may keel over. Such changes of helm as we have had in past years would make the stanchest of craft travel heavily.

There should be no violent modifications in tariffs, whether on railroads or at ports. Every readjustment upsets business. Perhaps some industries do need to be readjusted, but the work should be done slowly so that labor can move to a more suitable location; so that capital rather than being withdrawn may not be further expended in those industries that are based on unfair economic conditions; and so that those who have made bona-fide loans to certain industries based on conditions found to exist may not, when the conditions are being corrected, lose the money they have put out at interest. The 15c. increase in railroad tariffs schemed for the coal business in West Virginia should be divided over at least three years, and the reduction of the anthracite tariff, recently ordered by the Interstate Commerce Commission, should have been spread over an even longer period.

If an industry is based on a certain tariff, national or industrial of any sort, any change in it should be gradual, so that business in general should not feel the jar. There is no other country where business travels so by jerks or where the fluctuations of industry are so great. For a time our commercial activities sail along merrily. The rich man makes a fair profit. Someone thinks it excessive, and it is cut down. Immediately the rich man ceases to have ready money, and he cannot make improvements, build railways or factories, and as an equally immediate result that portion of business which depends on the new work started by such rich men suffers and is idle.

The coal business depends on the railroad, the brick and like industries. Granted a stagnation owing to the lack of earnings to create new capital; granted a lack of desire to invest because opportunities are suddenly far less appealing in the forms of investment which each capitalist understands or because the profit is seen to be lower than before or less than what is confidently expected in the future; granted a fear to invest because of all the dire things the fear of other failures creates—then all that part of business based on progress and not on diurnal needs will utterly disappear.

That is what has happened to the coal business in the past year. Let us have reformation wherever it is needed, but not revolution. There is need for a steady hand upon the wheel, that will guide us safely and not spill us over in the road. Perhaps we may steer toward the wrong town, but if we veer slowly rather than turn abruptly, we shall certainly not upset by the way.

The coal business is suffering from the foolish restrictions placed on other industries. But the coal men are themselves partly to blame. The operators were the leading baiters of railroads about car shortage and were among the first to leave the railroads with empty cars on their hands in the stagnation that followed. The coal shipper had no more right to insist on the railroad having cars for all possible shipments than the railroad would have a right to demand at any moment the delivery of an unreasonable amount of coal. Neither a railroad nor a producing company can afford to use its capital intermittently so as to meet all kinds of unreasonable demands of merely temporary duration.

But unreasonable as they are, we make all kinds of suddenly exercised restrictions; we lay burdens on commerce which, all unexpecting, commerce cannot meet; and then we wonder why in 1914 our coal trade was not 66 per cent. efficient.

If that 33 per cent. of loss could only be salted down, how wealthy we would be! If that time, instead of being devoted to loafing around stores and bar-rooms and making home unpleasant, had been conserved for the building of homes, the making of railroads and the erection of factories, we might well be a richer and happier people.

But we go on destroying industry by our coquettish moods. We question how and what we should build, but we recognize that first the site must be cleared. So we tear down and leave the building for a later day. In the future we shall imitate the gardener who when he would bend a tree or a limb does it gradually week by week so that he does not strain the limb too severely and break rather than bend it.

Company and Other Stores

In making a general summary of the bituminous coal census in 1909, the United States Bureau of the Census says:

> In the United States as a whole the total expenses reported for mines without coke manufacture amounted in 1909 to $301,451,896 and the total value of products to $315,894,935, showing a difference of only $14,443,039, or about 5c. per ton of coal produced. In Arkansas, Iowa, Kentucky, Oklahoma, Oregon, Tennessee, Virginia and West Virginia the expenses reported exceeded the value of products. For mines with coke manufacture . . . in Kentucky, Tennessee, Virginia and Washington the expenses reported . . . exceeded the value of products.
>
> These data cannot be taken as showing accurately the amount of profit or loss in the coal-mining industry of the several states, but they do seem to indicate that in many states the industry obtains only a very low rate of profit, if any. It should also be noted that many operators make a considerable profit by renting houses and selling merchandise to their employees. The Bureau of the Census corresponded with many operators whose returns showed an excess of expenses over the value of products, and not a few of them stated that while there was a loss in their coal-mining business proper this was more than counterbalanced by profits from selling merchandise and renting houses.

The remarks about stores and houses may appear a damaging indictment against the coal operator, but surely because the mine owner has lost money in coal production is no reason why he should lose it in all his other ventures, allied or unallied. The company store really stands the most favorable comparison with the city store, and the house rents at the mine will not suffer when contrasted with those of the country village. Of course city rents for obvious reasons are considerably higher than those in the country or at the mine.

Merchandizing in the cities has produced some of the largest of fortunes, and these were usually made in a single generation. It is only necessary to mention such men as Wanamaker, Altman, Straus, Field and Stewart to show that the profits of merchandizing in the open market are quite frequently extremely large, and it is questionable if they are nearly as great in mine stores.

In large towns the operators' stores have to meet competition of the fiercest kind, and they frequently succeed so well in doing it that they take away the bulk of the business from the local merchants, owing to the fact that they have a large trade absolutely secured from bad debts and of a volume which can be relied on. In the little mine villages the difficulty in obtaining men makes the operators chary about asking high prices.

The profits on store sales need not be high to return a large income. Almost the whole wage of the miner forms the basis for that profit. The larger part of it is spent at the stores and for house rent, and the income from the sales and rents might justifiably be nearly 75 per cent. of the profit which should be, but is not, made by mining coal.

Why should an operator be prevented from profiting from 42 per cent. of his aggregate business in such a degree as to make up for what he loses on the other 58 per cent., so long as his profit on the smaller part of his business is not unreasonable? In justice to the United States Bureau of the Census it must be conceded it does not suggest any such conclusion, but some of the critics of the coal business having taken away the coat of the operator would take away his cloak also.

Horse Sense vs. a Technicality

Of recent years some of the constructions placed upon workmen's compensation acts by the courts are "fearfully and wonderfully made." Damage suits to obtain compensation for injuries sustained in mining accidents have often resulted in the award of large sums to the person injured, purely and solely because the compensation law removes the common-law defenses of "contributory negligence" and the like. Much injustice has thus often been suffered by the operator or mining company.

A notable exception to this general rule has recently come to light in West Virginia. It appears that a mine employee removed from a drill hole a stick of dynamite with a lighted fuse attached and was "injured" in the explosion which followed. This workman brought suit for damages against his employer, alleging in substance that he had not been warned of the danger of intimate physical association with dynamite about to explode.

Strange as it may seem, this man won his suit in the lower court and secured a verdict for damages. Unfortunately for him, however, the mining company saw fit to appeal the case. The supreme court reversed the decision of the lower tribunal, holding that while the compensation act was valid in denying to employers under certain circumstances the common-law defenses of the assumption of risk and contributory negligence, the failure to warn a man of mature years and in full possession of his normal reasoning faculties of the danger of withdrawing from a drill hole a stick of dynamite attached to a lighted fuse did not constitute negligence on the part of the employer.

That the man was injured by the explosion there was no question; that there was no reasonable excuse for such an injury appeared equally obvious. In this day and age every adult knows that dynamite is explosive and that its neighborhood when it is on the verge of detonation is no place in which to tarry. No employer should be taken to task for failure to warn a man of a danger of which he and every other normal human is fully cognizant. This is a common-sense decision, and it is to be hoped that we may have more such in the future.

A Soft Spot in the New England Market

The New England coal trade inland from Boston, Portsmouth, etc., has shown some interesting developments during the week. Two or three of the distributors have been in lively competition for 1916 contracts, and a flat price has been named in some instances.

If current rumors are verified, contracts have been closed at prices down to $3.50 f.o.b. Boston for a term lasting until Apr. 1, 1917, and this is not a favorable prospect from the operators' standpoint. It will probably mean that $2.85 f.o.b. Hampton Roads is still too high a basis to be consistently maintained. The old cry of "too many agencies" may again be raised.

Sociological Department

Intercompany First-Aid Meet in Somerset County

SYNOPSIS—In Somerset County an important first-aid meet was held by the Y. M. C. A. and the mine operators, with the aid of the state mine inspector. A mining institute meeting preceded the contest.

The Third Annual First-Aid Meet of Somerset County was held Sept. 4 in Boswell, Penn. This meet was promoted by the mine operators, the Pennsylvania State Y. M. C. A., State Mine Inspector F. W. Cunningham and the United States Bureau of Mines. George B. Landis, of the state Y. M. C. A., was the leading spirit in the promotion of the contest.

A distressing explosion of gas in the Orenda mine at Boswell during the previous week emphasized the need for first-aid work at every mine. Of the 19 killed in that explosion, three were members of first-aid teams in Boswell. All the members of the team who were not injured rendered most commendable aid to the wounded and won unstinted praise from the physicians and hospital attendants.

Through the last winter several teams met faithfully for first-aid training. Five of them competed in a local contest on the Fourth of July. During the two months preceding the meet, W. J. German, C. O. Roberts and Jesse Hensen, of the United States Bureau of Mines, gave much time to the training of the teams, and for two weeks the mine-rescue motor truck toured the field, arousing much interest in first aid.

MINING INSTITUTE MEETING IN MORNING

On the morning of the contest 28 teams, each containing six men, reported. They represented nine companies from 23 mining towns. At 10 a.m., prior to the contest, a mining institute was held, and a crowded house listened to an address by Austin King, chief inspector of the H. C. Frick Coke Co., and H. D. Mason, Jr., assistant engineer of the United States Bureau of Mines. Three thousand feet of moving-picture film was shown, illustrating safety, first-aid and improved methods of mining.

After noon the teams paraded to the ball grounds, accompanied by two bands. There were 2,500 interested spectators. The 28 teams, comprising in all 168 men, were in line. A space of 10 ft. was given to each team, position being assigned by lot. At the sound of the gong the patient advanced to his place, and at the second signal those who were to administer first aid followed him and proceeded to work.

The first event was for one man only. The problem was: Victim has four fingers severely crushed; bleeding wound in the hand. Treat and carry by shoulder lift. T. R. Downie, of the Consolidation Coal Co.'s plant at Acosta, made a perfect score.

The two-man event was: A simple fracture of the right forearm and a scalp wound on the back of the head, but no bleeding. Treat and carry the patient 30 ft. without using a litter. The contest resulted in five teams making the same score, and so the following problem was submitted to them: Patient found unconscious, lying with his abdomen across an electric wire and with a simple fracture of the right forearm. Rescue and treat the case, providing artificial respiration for two minutes.

But still three teams tied for first place, and the following problem was submitted: A victim is burned by steam on face, neck, ears and both hands. Treat and carry the patient 20 ft. without a stretcher. As a result the Jenner-Quemahoning Coal Co.'s team No. 2, of Jerome, Penn., obtained first place, and the Orenda No. 1 team, of the Merchants Coal Co., was second. Third place fell to Jenner-Quemahoning No. 1, also of Jerome, Penn.

The full-team events consisted in alleviating the condition of the following victims: 1. A man has been run over by a motor and his right arm has been cut off close to the shoulder, causing profuse bleeding and breaking several ribs on his right side. Treat and carry on a stretcher. 2. A man is found unconscious and lying on his back across a live electric wire. Rescue him and give him artificial respiration for one minute. Then treat the burns on the back and right upper arm. Carry 30 ft. on any improvised stretcher except one made of poles and coats. 3. A man has a broken back, with a simple fracture of the right forearm. Prepare for transportation.

The averages of the scores made in these three events showed four teams with 99.3 each. The teams broke the tie by working on the following problem: A man is found under a fall of coal, having sustained a punctured wound of the abdomen, a broken rib on the left side and a cut on the right side of the face from which the blood is coming in spurts. Treat the case, three men carrying the patient 20 ft. in a passage so narrow that a stretcher cannot be used. As a result Orenda team No. 3, of Boswell, received 100; Brothers Valley Coal Co. team, Pen Mar No. 3, of Macdonaldton, had 98; the Consolidation Coal Co. team, of Acosta, 97; and the Somerset Mining Co., team, of Hooversville, 95.

BOTH LAY AND MEDICAL MEN AS JUDGES

The events were hotly contested, and the judges marked closely. On all ties there were three judges to each team. The judges were: Drs. E. H. Lowe, L. M. Gurley, of Johnstown; J. W. Hawes, of Windber; C. C. Custer, of Johnstown; C. B. Korns, of Sipesville; H. Hertzler, of Jenners, and S. J. H. Lowther, of Somerset. Other judges were H. D. Mason, Jr., D. Harrington and C. O. Roberts, United States Bureau of Mines, of Pittsburgh; O. J. Shank, of Windber; George A. Deike, Mine Safety Appliance Co., of Pittsburgh, and Edmund Williams, of the Cambria Steel Co., of Johnstown.

The judges were selected by the representative of the American Red Cross in Somerset County, Dr. M. A. MacIntyre, of Boswell. The judging of first-aid meets by other than medical or surgical practitioners is condemned by the officials of the American Red Cross, and the introduction of expert first-aid men to assist the doctors has been made a subject of protest.

The Du Pont cup for winners in the team events was won by Orenda team No. 3, Frank Swope, captain; Aaron Seasock, George Patton, Herbert Horner, Charles Hurd and Fred Moore, patient. The Boswell First-Aid Association added $10 for the purchase of personal prizes. The American Mine Safety Association and the American Red Cross awarded medals to the winners.

The Brothers Valley team, Pen Mar No. 3, of Macdonaldton, consisting of Robert Forsythe, captain, Robert Purcell, Sam Verchetti, William Albright, Harry De Haven and Lawrence Purcell, received second prize—a Bauer & Black first-aid cabinet and Red Cross certificates.

The third prize was awarded to the Consolidation Coal Co. team of Acosta, which comprised S. F. Shafer, captain, T. R. Downie, Robert Grove, William Crosby, R. B. Zimmerman and John Byron, Jr.

The average records of the various teams in the three full-team events which preceded the contest were as follows:

Somerset Mining Co., of Hooversville, 99.3; Consolidation Coal Co., of Acosta, 99.3; Merchants Coal Co. No. 3, of Boswell, 99.3; Brothers Valley Coal Co. No. 3, of Macdonaldton, 99.3; Consolidation Coal Co. No. 1, of Jenners, 99; Victor Coal Mining Co., of Holsopple, 98.3; Merchants Coal Co. No. 2, of Boswell, 98.3; Jenner-Quemahoning Coal Co. No. 2, of Jerome, 97.6; Knickerbocker Smokeless Coal Co., of Hooversville, 97.6; Brothers Valley Coal Co. No. 2, of Macdonaldton, 97.3; Merchants Coal Co. No. 4, of Boswell, 97.3; Merchants Coal Co. No. 5, of Boswell, 97.3; Consolidation Coal Co. No. 2, of Meyersdale, 97; Quemahoning Coal Co. No. 4, of Ralphton, 96.3; Consolidation Coal Co. No. 2, of Jenners, 96; Merchants Coal Co. No. 1, of Boswell, 96; Brothers Valley Coal Co. No. 1, of Macdonaldton, 96; Jenner-Quemahoning Coal Co. No. 1, of Jerome, 96; Consolidation Coal Co., shaft 123, of Gray, 95.6; Quemahoning Coal Co. No. 1, of Ralphton, 95; Consolidation Coal Co., of Pine Hill, 94.6; Consolidation Coal Co., of Wilson Creek, 94.6; Consolidation Coal Co. No. 1, of Meyersdale, 94.3; Baker Whiteley Coal Co., of Hooversville, 94; Quemahoning Coal Co. No. 5, of Ralphton, 93.6; Quemahoning Coal Co. No.

2, of Husband, 93; Quemahoning Coal Co. No. 3, of Ralphton, 93; Quemahoning Coal Co. No. 1, of Husband, 93.

The committeemen in charge of the meet were F. W. Cunningham, state mine inspector; Samuel Steinbach, Consolidation Coal Co., Somerset; Richard Maize, Jenner-Quemahoning Coal Co., Jerome; John Gibson, Jr., Merchants Coal Co., Boswell, and Ralph Zimmerman, Quemahoning Coal Co., Ralphton.

First-Aid Teams at Oliver Plant

At the coal mines of the Oliver & Snyder Steel Co., near Uniontown, excellent first-aid work has been accomplished though but little about it has so far been published.

The illustration herewith shows the participants in this work, both male and female. In the first row is Junior team No. 2, comprising from left to right, Joe English, Clyde Perkins, John William Kegg, John O'Brien, captain, Pat English and Charles O'Brien.

In the second row is Junior team No. 1, comprising from left to right Charles Perry, Edward Tishue, Cecil Dixon, captain, Samuel O'Brien and Frank Phillips.

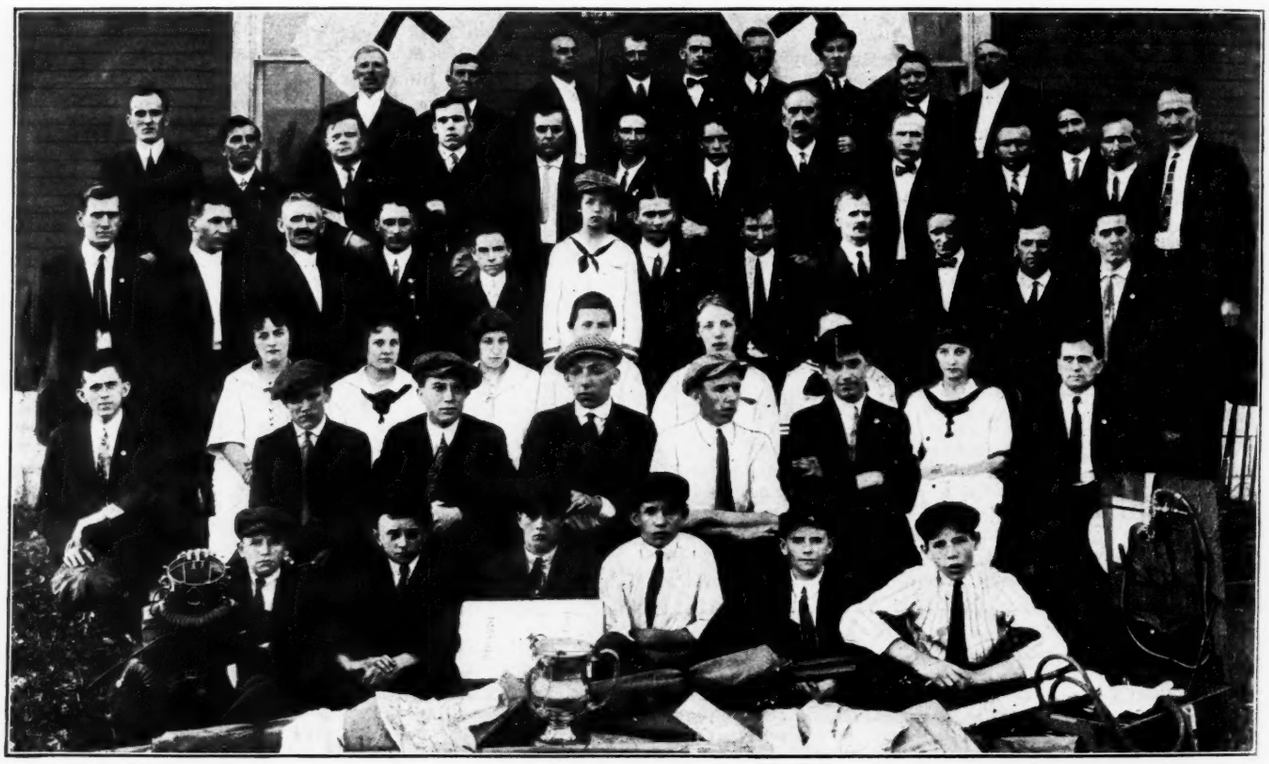
In the third row is the ladies' No. 5 team, consisting of Stella Rafter, Florence Grim, Daisy Patterson, Isabella Dixon, Mrs. Harry Rafter, Mrs. Arthur Grim, Elsie Dixon and Barbara Patterson, captain.

In the fourth row is No. 1 team, consisting of Fred S. Watts, captain, Charles Grim, Jr., Charles Carnes, J. R. Craft, Claude Lowdermilk and James English. Farther to the right is No. 2 team, consisting of William Henry, Arthur Grim, Charles Gillingham, John Anthony, David Davis, Ernest Sauers and William Davis, captain.

In the fifth row is No. 3 team, consisting of Don McPhail, captain, Frank Yarnosky, Andy Stiner, William Lally, Evan Cramer and Wilbur Griffith. Still farther to the right is No. 4 team, with Thomas Kegg, Lewis Reiver, James B. Hines, John Petrovish, James Hill and Henry Roebuck, captain.

In the back row is Yard Foreman George Dixon, Engineer Charles Hinsey, Manager Ira D. McCowan, Dr. George O. Evans, Instructor Clyde Brehm, Superintendent John H. Lane, Mine Foreman John Curry, Mine Foreman Gomer Lewis, Superintendent of Car Service J. B. Frost and Mine Foreman Holly Wilson.

The mines of the company are located at Oliver, Fayette County, Penn., on the Pennsylvania R.R. and the Baltimore & Ohio R.R. The seam mined is the Pittsburgh bed, which has a treacherous roof, making first-aid work most necessary.



FIRST-AID TEAMS OF THE OLIVER AND SNYDER STEEL CO. AT OLIVER 1, 2 AND 3 AT UNIONTOWN, PENN.

Permissible Explosives Tests

At the invitation of Van. H. Manning, acting director of the United States Bureau of Mines, a number of the prominent manufacturers of permissible explosives used in coal mines met in conference at the Bureau of Mines offices in Washington, June 7, to discuss the tolerances that may be permitted in tests of field samples or manufacturers' samples of permissible explosives.

At the request of Mr. Manning, Dr. Charles E. Munroe, consulting explosives chemist of the Bureau of Mines, presided at the conference and explained its objects. Addressing the manufacturers, he said:

"Today there are 133 different explosives on the permissible list. There have been others admitted to the list and later removed. In all, over 150 explosives have been tested by the various methods and the results carefully recorded by the bureau. It was found that the bureau could not rest content with simply testing the original samples submitted and saying that hereafter that was a permissible explosive provided it was used in the manner described by the bureau. It was felt that in order that the bureau might know that the explosives were of the proper kind, samples should be obtained in the field and that such samples should be tested by the same methods. When this was undertaken, the question came up as to how nearly the tests should conform to the results of the tests made on the original samples because it is well known that it is physically impossible for a man to exactly duplicate results in two tests.

"After a large amount of data had been gathered, a committee was appointed by the director to consider the problem. The committee has been working on the matter for a long time; the data have been tabulated and closely investigated by the members of the committee."

The questions submitted by the committee of the bureau were taken up in detail, and the proposition to which the conference assented was as follows:

In order to define more exactly what is meant by the phrase "similar in all respects" in the definition of a permissible explosive—namely: "An explosive is called a permissible explosive when it is similar in all respects to the sample that passed certain tests by the United States Bureau of Mines and when it is used in accordance with the conditions prescribed by this bureau"—the following tolerances are recommended for field samples or manufacturers' samples of explosives, beyond which such lot of explosives may not vary.

CHEMICAL ANALYSIS

Moisture to be fixed by a sliding scale of from 1½ per cent. at zero to 4 per cent. at 10 per cent. of moisture in original sample, this tolerance being on total percentage of moisture in the explosive.

For other ingredients (or their equivalents) in quantities not exceeding 60 per cent., special rules shall apply. For ingredients in quantities of 60 per cent. or more the tolerance shall be plus or minus 3 per cent., provided that the ingredients of a permissible explosive shall be considered to be those substances reported as found by the Bureau of Mines in the original sample of that explosive submitted for test as to its permissibility, and provided further that an equivalent shall be considered to be a substance which would not materially alter the properties of the explosive and which would produce the same result as the original substance.

As to the products of combustion (determined by Bichel gage test), the volume of poisonous gases from 680 grams of the explosive including its wrapper must be less than 158 liters, except that in case the first test yields 158 liters or more of poisonous gases per 680 grams of the explosive, including its wrapper, the average result of three tests agreeing within 5 per cent. of each other shall be taken, and no explosive shall remain permissible when this average for poisonous gases exceeds the above standard limit.

PHYSICAL TESTS

The rate of detonation (the average of three trials with Mettegang's recorder) must be plus or minus 15 per cent.

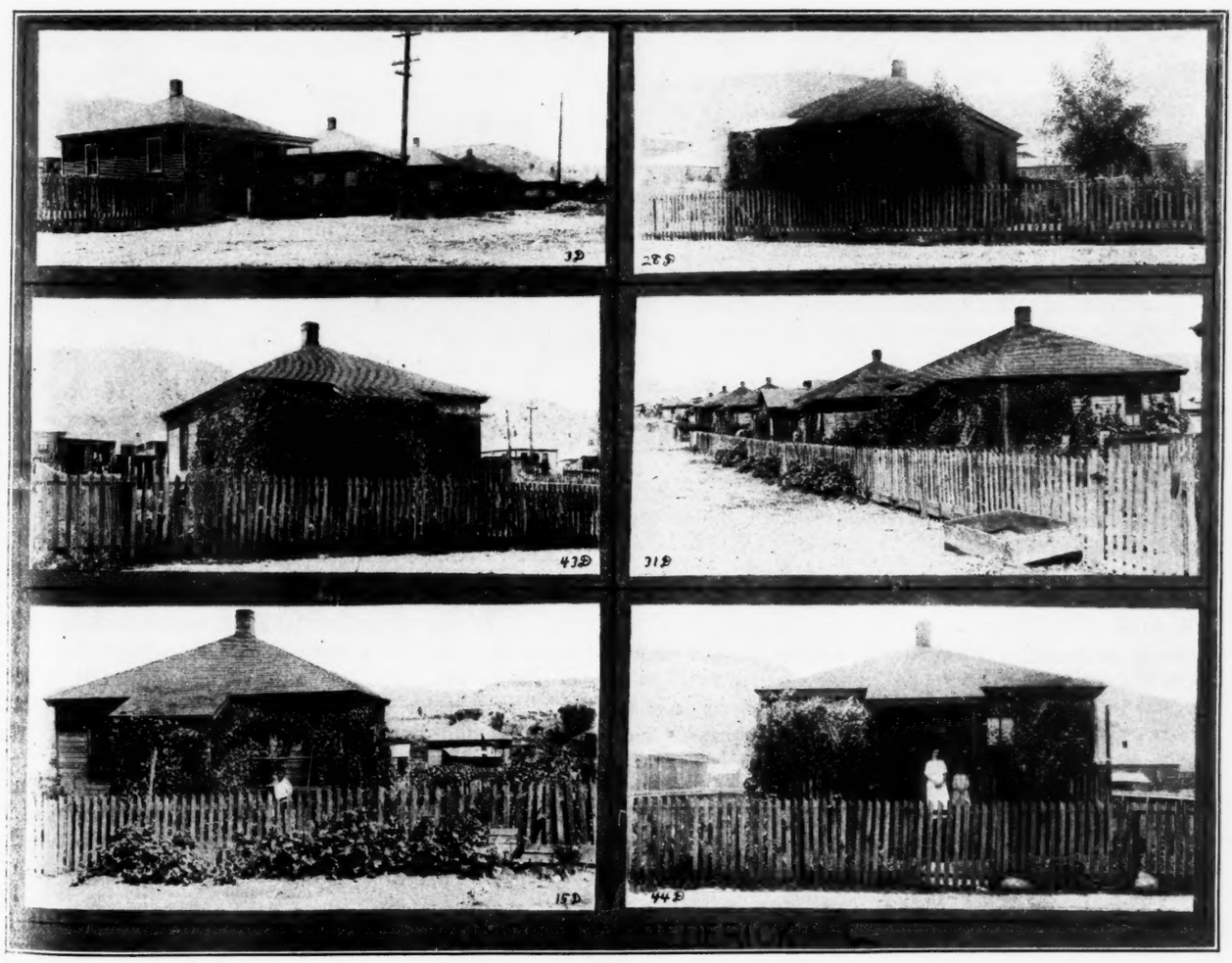
The unit deflective charge (the average of three trials with the ballistic pendulum) must be plus or minus 10 per cent.

The grams of wrapper per 100 grams of explosive must be plus or minus 2.0 grams (average of four determinations), provided that the manufacturers shall submit samples of all different sized cartridges, to be considered as part of the original sample, the amount of wrapper to be determined for each size of sample, and provided further that the tolerances as suggested shall be made in comparison with the various diameters as submitted with the original sample.

The apparent specific gravity of cartridge, by sand, must be plus or minus 7.5 per cent. (average of four determinations), provided that actual density shall be determined on cartridges of the same diameter as the standard and provided further that manufacturers shall be required to submit samples of all sizes.

As to gas and dust gallery No. 1, no ignition must be obtained in each of one or more trials. In the retesting of permissible explosives by tests 1, 3 and 4, the charges of the explosives fired will be reduced 10 per cent. in weight from the weights originally used in order to eliminate any likelihood of a failure being due to the natural variations in the conditions of the gallery.

In the pendulum friction test, each explosive must pass a test of ten trials under the same conditions as originally imposed, except that the fall of the wood-fiber shoe will be reduced by 10 per cent. in order to eliminate any likelihood of a failure being due to the natural variations in test conditions.



HOUSES IN THE VILLAGE AT THE FREDERICK MINE OF THE COLORADO FUEL AND IRON CO.

Discussion by Readers

Mine Discipline Imperative

Letter No. 1—I was greatly pleased to see the long editorial entitled "Is Our Conception of Mine Discipline Changing?" *Coal Age,* Oct. 2, p. 552. I believe this is one of the most vital questions connected with coal mining, and its discussion in *Coal Age* will reach more mining men than would be possible by any other means.

In the large majority of cases the underlying cause of mine accidents is found to be someone's disobedience of instructions or violation of the mine laws or regulations. The fault may lie with the superintendent, foreman, assistant foreman, fireboss, miner, driver, trip-runner or even a trapper boy. In the public press the blame is largely laid on the shoulders of the company or some of its officials.

The editorial to which I have referred regrets the decline of the old-time discipline in coal mining, and it is true that the discipline of today is not what it was a few years ago. It is difficult to give the real reason for this decline, as there are probably numerous contributing causes. I will mention some of these in the hope that others will be led to do the same. By this means we may be able to discover the chief causes and apply the proper remedy.

Responsibility of the Miners' Union

There is hardly a question that the organization of miners known as the "union" is very largely responsible for the lack of mine discipline observed today. This may be chiefly owing to the fact that the union does not concern itself with anything but the number of hours a man works in the mine and the wages he receives. Its constant effort is to decrease the one and increase the other of these items. The public generally considers a labor union as a fine thing, and the press tells great stories of what the union has done for the miner. If the public could visit the mines, however, and observe the manner in which work is performed by men who belong to the union, as compared with that done by nonunion men, their opinions would be quickly changed as a result of their ob servations.

Comparison of Union and Nonunion Mines

The following comparison of conditions existing in the mines of eastern and western Kentucky will be of inter est in this connection:

While in charge of a mine in the mountains of eastern Kentucky, I had representatives of almost every nation on the globe, from the Alabama negro, who had never seen the inside of a coal mine, to first-class miners from England, Germany and France. In dealing with these men, however, I had only to place a chalk mark on the roof where a prop was needed, and the timber would be set promptly. When a miner did not understand, I would point to the chalk mark on the roof and then to the prop lying at the side of the road, and he would at once set the post before finishing the loading of his car. This mine was a nonunion mine, and as foreman I had the authority to enforce discipline by discharging anyone who violated the rules or went contrary to my instructions. The men so discharged would seldom find their way back into the mine.

Compare these conditions with those I am about to describe as observed in a mine in western Kentucky of which I had charge. The men working in this mine belonged to the union, and I foolishly thought that my worry in regard to violations of rules and regulations would now cease, as such violations could be quickly referred to the committee who comprised the business end of so great an organization. I believed this would be an effective means of stopping men from violating the rules of the mine and endangering their own and the lives of others; but, alas, I was greatly disappointed.

A Violation of the Mine Law

A few days after taking charge of the mine, I found a miner filling a cartridge with powder while his lamp was on his head. When I forbade him to do it again, he told me that it was none of my affair whether he filled his cartridge with his lamp on his head or otherwise. I replied by stating that I would send him outside at once if I found him doing the same thing again. The next day I watched and, finding that he repeated the act, I forbade him to load another car and told him to go at once to the office for his time, at the same time giving the driver orders to pull the man's coal to the bottom.

The same night the mine committee waited on me, asking that I go with them to the superintendent, which I did. The superintendent, however, flatly refused to reinstate the man, with the result that the committee reported the case to the union. The claim was made that I had no right to discharge the man, as there was nothing in the union contract giving me that authority. It was stated that the company would not have been to blame if the man had been killed. In order to avoid further trouble, the man was permitted to go back to work and the company was obliged to give him three days' pay.

A Terrible Sequel to Disobedience

The sequel to this incident is of even greater interest than the act itself, as it shows plainly the danger to a miner of disregarding mine laws and regulations made for his safety. The man worked only 32 days longer, when he was discharged by a power that he could not oppose through his union or by any other means. He was carried from the mine on a stretcher, after having received first-aid treatment that was unavailing.

While waiting for the coroner to select a jury, I could not but reflect and ask myself, as he lay there wrapped in blankets, Who is responsible for this man's death—the company, the mine committee, the district officials or myself? The court decided that the company was not responsible, since the assistant foreman testified that he had told the man not to fill his cartridge with his lamp on his head. After reading the article in *Coal Age,* I

asked myself, Would it not pay every man to obey the instructions given him by the officials in charge of the mine, whether or not these are a part of the contract?

Other Reasons for Lack of Discipline

Another reason why there is not greater discipline in the mines today is the fact that many mine officials hesitate to prosecute a man for disobedience of orders or for minor violations of the rules and regulations in force. Oftentimes the law is not sufficiently explicit and clear on the point in question or it does not specify the means to be used in prosecuting violations of the law.

Another reason is the lack of education of miners, who mostly consider that their time is worth more to them when digging coal than when setting props. Many miners think that they know more about the place where they work every day than the boss who visits it occasionally, but scarcely one out of a hundred miners sounds the roof before proceeding to work. It may be said that 50 per cent. or more of the miners cannot read or write and another 25 per cent. never look at the mine rules, while a large portion of the remainder fail to obey after they have read the rules, preferring to run the chance of prosecution for any violation of the same.

Many mine officials are themselves to blame for lack of discipline in the mines, because they consider that they have complied with the law when they have posted a copy of the mine rules and regulations. They are like the general manager quoted in the *Coal Age* article as stating that his superintendents had something else to do than to watch the men and see that they obeyed the rules that were posted.

The use of liquor may be rightly given as another cause for lack of discipline in mines. When a man goes to work still under the influence of the liquor he drank the night before, he is in no condition to obey the rules or follow the instructions given him by the foreman, especially if these call for extra exertion or labor on his part. These are some of the reasons why more attention is not given to maintaining a strict mine discipline, and yet there is no greater factor in the prevention of accidents than this. Let us hear from others. O. B.

Cleaton, Ky.

Efficient Mine Foremen

Letter No. 9—The discussion on "Efficient Mine Foremen" is peculiarly interesting, many of the views and opinions being expressed by mine foremen themselves, than whom, it must be admitted, none are better qualified to speak. These men have been "through the mill," and gained an intimate, human and material knowledge of what constitutes an efficient foreman. This is true in my own case, since I have experienced the ups and downs—principally the downs—of a mine foreman's fortunes in three different states. The number of men in my charge has varied from a mere handful to 700 or 800 employed in the mine.

What Constitutes a Good Mine Foreman

My experience confirms the definition I heard given by an old mine foreman some years ago as to what would constitute a good foreman. This old foreman was George Young, a member of the State Board of Examiners. The board was composed mostly of practical miners whose aspirations had enabled them to rise from digging coal at the face to official positions in the mine. In company with several others, I was taking the examination for my first certificate of competency. Sitting in the hotel lobby, after the first day's grind, this gray-haired old friend of years ago, replying to a question asked by one of the boys, set a standard that still appeals to me as a fairly accurate definition of what constitutes a good mine foreman.

He said, "My lad, the mine boss of the future, if he fulfills all that will be expected of him, besides being a practical miner, will be an athlete, diplomat, somewhat of a mining engineer and have a pretty good understanding of mechanics, chemistry and geology." While we boys took this answer as a joke, I know now that the old man was more in earnest than we thought. With the experience of the past, George Young was able to look farther into the future and knew better than we what would be required of coming mine officials. With him I can say earnestly, If ever there was a job that called for the exercise of every faculty, physical and mental, that job is the mine foreman's today.

High Standard of Requirements

During the past 30 years Pennsylvania has required an increasingly higher standard of efficiency in the examination of candidates for certificates of competency to act as mine foremen and firebosses. Aside from his personal experience as a miner, the candidate must now show a certain proficiency in mathematics and a knowledge of steam and mechanical engineering, embracing the application of electricity in mining operations. Indeed, the subject last named is considered of the greatest importance, judging from the revised bituminous mining laws (1911).

To quote a recent contributor to *Coal Age,* an efficient mine foreman must possess some knowledge of human anatomy and be able to give first-aid treatment and engage in rescue work as occasion may require. His knowledge of geology and the formation of coal must be such as to enable him to develop the mine in an intelligent manner, especially if he is in charge of a small mine for the development of which he is responsible. As this contributor says, "These are but a few of the things a mine foreman must know."

Small Salaries Paid Mine Foremen

The same contributor concludes with the remark, which he overheard made by a mine operator, to the effect that he "would be glad to pay a foreman possessing such knowledge and qualifications a salary of $2,000 a year." In regard to this last statement, I know personally many practical, well-informed mine foremen capable of managing a mine as economically and safely as conditions will permit who receive little more than half the sum mentioned. Close observation and acquaintance with all classes of salaried men, not mining men alone, only deepen the wonder that such men, possessed of a practical knowledge of mining and having attained a certain degree of technical efficiency by the use of midnight oil or otherwise, should be compelled to accept the small remuneration offered for their services.

No doubt the chaotic condition of the mining industry, with its cut-throat competition, which frequently compels the operator to sell coal at or near the cost of its production, accounts for the meagerness of the salaries paid

the men who have charge of the mines and who shoulder the heaviest responsibilities in their relation to the company, the men and the commonwealth One thing I do know is that for every superintendent, to say nothing of mine foremen, who receives $2,000 a year I can point out a dozen who receive less than that amount. If anyone doubts this statement, I would suggest that he insert in *Coal Age* a small advertisement calling for an efficient mine foreman possessed of such knowledge and qualifications as mentioned and stating that he will be paid the salary named. The result, I venture to predict, would be a flood of applications from as well-qualified foremen as there are in the United States or any other country.

An Impossible Task Often Expected

While admitting that many mine foremen fall short of the standard of efficiency that they might attain, it is equally true that many coal companies expect too much of their foremen, who in many instances are compelled to produce results with no resources at hand that will enable them to do this, even though possessed of a store of knowledge and experience. In many cases the natural conditions or the equipment of the mine makes the production of cheap coal an impossibility. The best foreman living cannot rehabilitate an old mine and produce results at once, though he is often expected to accomplish a miracle. Some mines, like some lives, require time to overcome a long period of dissipation and misuse.

Perhaps there was some humor in the remark of Thomas Hogarth, *Coal Age*, Oct. 9, page 601, stating that "the trouble with most mine foremen is that they spend too much time in one place." I can hardly repress a smile as audible as the voice with which a mine mule calls for his dinner when I think of it. On coming out of the mine a few days ago in company with a sturdy Briton, I drew his attention to this statement of Mr. Hogarth's. Turning fiercely about, he exclaimed, as he wiped the heavy drops of sweat from his face and forehead: "What's he mean be that? Does he mean we sit around too much?" And turning in the direction of his well-earned supper and repose, he added, "A man's more apt to be runnin' his bloomin' legs off than to be sitting around."

Perhaps Mr. Hogarth refers to days long since gone by when miners practically all spoke English and were of average intelligence with the foreman himself. The mine being small and the coal hauled by mules, there was little or nothing to go wrong, and the foreman could sit for an hour or two at the side of the track or in the fireboss' shanty and enjoy a rest. But in these days, when the law requires the foreman or his assistants to visit every working place at least once a day, there is not much danger of his wearing a smooth place on the bench at the side of the track.

A Mine Foreman's Activities

As an illustration of the activities of the average mine foreman, I would cite my usual experience when visiting a mine. At the office I am told by the superintendent, "You'll find John inside somewhere." Inquiry of the motorman brings the response, "Why, the boss went up the mains a bit ago." Proceeding up the main entries, I find a driver who says, "I seen him headin' up the third-left." Following the trail through all the rooms on the third-left and then through a crosscut down the fourth-left, a trapper-boy there offers the information that "No. 23 room on fifth-left cut through last night into an idle room off the fourth. Probably the boss went through there to the fifth-left."

Giving up the chase of this foreman on his marathon, I determined to wait his reappearance. Musing on this incident, I conclude that there are many "Johns," in many mines in many states, who do too little sitting down. Most of the foremen I have known, and feel honored to know, are overzealous in their employer's interests, which are more on their minds than the thought of the small salary they are paid. I would say that their error, if such it can be called, lies in attempting to do more than one man can accomplish.

In conclusion I would state that the qualifications that mark an efficient mine foreman are much the same as those that indicate efficiency in other lines of endeavor. The man must know his work and do it, regardless of intimidation from any source. In few vocations do the lives of men depend so much on one man's actions as in mining. The mine foreman must be sober and cool-headed, a leader of men and a firm disciplinarian. He must be sure he is right, firm in his convictions and a student of human nature as well as the principles of mining. Without these elements he cannot hope for success. But to understand and handle men he must understand and be able to handle himself. Sim. C. Reynolds.

Houston, Penn.

Letter No. 10—The letter of Wm. Crooks, *Coal Age*, Sept. 4, page 394, in which he told of the great improvements made in a mine by a new foreman, recalls a similar incident in my own experience.

The foreman of a certain mine on giving up his place was asked to recommend a man for the position. To the surprise of all, he recommended a new man who had never been in the mine and was unacquainted with the conditions. This, however, was not the worst feature of the change, as will soon appear.

The Foreman and His Assistant

The assistant foreman in this mine had held his position for ten years, and the miners naturally expected that he would be promoted and made foreman when that official resigned—not that they expected to derive any advantage themselves from his appointment, but they thought he had earned the right to the place by his work for so many years. When the new foreman took charge, the assistant foreman was retained and continued to perform his duties as before. But as time went on, more work was left for him to perform, and he practically ran the mine, assuming the most of the responsibilities. The new man was a drinker and was almost sure to get on a "toot" every Sunday.

Conditions in the Mine Grew Worse

The assistant carried out the orders of the foreman to the letter, doing many things contrary to his own judgment, and as a result conditions in the mine grew rapidly worse. The ventilation was poor, the air at the working face being so bad that the men could not work full time, owing to headache and other ailments.

Things went on this way for a time. When the committee complained to the foreman, he smoothed matters over very nicely, and they were loath to take the matter up with the superintendent. The mine was an old mine,

there being two or more miles of abandoned entries having no tracks, where roof falls were hard to clean owing to the distance the dirt must be handled. The air became so bad on the main haulage roads that drivers could not hold their lights, and the oil lamps at the shaft bottom refused to burn. I was running a motor at the time, and in places where the roof was bad on the road I was afraid to ride the machine under the bad top. I would send the rider ahead and, starting the machine slowly, permit it to run alone until it had passed the bad place and was stopped by the rider. I would then walk by the place myself and in this way escape injury. In some places water stood over the roads.

The Assistant Appointed Foreman

The foreman gave little attention to affairs in the mine, but became interested in an elevator that was situated in the next town. In about a year he purchased a half-interest in the elevator and signified his desire to quit the mine, recommending his assistant for the place. Although the assistant had done practically all the work and had taken the full responsibility, the superintendent hesitated some time, but finally decided to give him a chance and appointed him as mine foreman. It was a hard proposition, but the man now appointed knew what was needed in the mine and started at once to improve its condition. In a short time he made a remarkable showing. The ventilation was greatly improved, the roads well drained, although he found this could be accomplished with the use of four pumps instead of seven as before, by draining the water into the same basin, by small ditches that cost practically nothing.

Before giving up his place, the previous foreman had ordered a car of iron rails. This arrived after the assistant had been promoted to the position of foreman. Not needing the iron, he had the rails neatly piled in a good place outside the mine, where they remained untouched for a year. He did not permit a single track tie to be sent into the mine, but instead made use of the old ties of abandoned tracks that had been thrown aside. He increased the output to 1,100 tons a day, without incurring any additional expense.

I cite this as an instance showing that the superintendent was not a good judge of men. He either did not know or did not care what his foreman was doing in the mine, but relied wholly on his judgment. I hope that this discussion will open the eyes of many superintendents and cause them to come into closer touch with their foreman and know his qualifications, as well as those of his assistants, any one of whom may be required to take the foreman's place at a future day.

Cleaton, Ky. OSTEL BULLOCK.

Study Course in Coal Mining

By J. T. Beard

The Coal Age Pocket Book

CUBIC MEASURE

1728 cubic inches	= 1 cubic foot	
27 cubic feet	= 1 cubic yard	
16 cubic feet	= 1 cord foot	
8 cord feet	= 1 cord	128 cubic feet

A **cord of wood** is a pile 8 ft. long, 4 ft. wide and 4 ft. high, and contains 8 × 4 × 4 = 128 cu.ft.

A **cord foot** is one foot of the length of the pile that makes a cord, and contains 1 × 4 × 4 = 16 cu.ft.

A ton of **round timber** (green) is taken as 50 cu.ft.

A ton of **squared timber** (green) is 40 cu.ft., it being assumed that hewed or squared timber has lost one-fifth of its original volume in squaring.

A long ton (2,240 lb.) of **anthracite** or a short ton (2,000 lb.) of bituminous coal broken (mine-run) occupies about 40 cu.ft.

There are two measures of capacity, known as "Liquid" and "Dry" measures, having like denominations but of different values. The old English wine gallon (231 cu.in.) was replaced in England, in 1824, by the imperial gallon (277.274 cu.in.), but is still the standard "Winchester" gallon in the United States. The "Dry" gallon, now practically obsolete, contained 268.8 cu.in.

LIQUID MEASURE (U. S.)

4 gills	= 1 pint	28.875	cubic inches
2 pints	= 1 quart	57.75	cubic inches
4 quarts	= 1 gallon	231	cubic inches
31½ gallons	= 1 barrel	4.21	cubic feet
2 barrels	= 1 hogshead	63	gallons
2 hogsheads	= 1 pipe	126	gallons
2 pipes	= 1 tun	8	barrels

DRY MEASURE (U. S.)

2 pints	= 1 quart	67.2 cubic inches
8 quarts	= 1 peck	537.6 cubic inches
4 pecks	= 1 bushel	2150.4 cubic inches
36 bushels	= 1 chaldron	44.8 cubic feet
1 quarts	= 1 gallon	268.8 cubic inches
8 gallons	= 1 bushel	2150.4 cubic inches

The standard bushel, in the United States, is the old Winchester bushel, which is a circular measure 18½ in. in diameter and 8 in. deep, contaning 8 (0.7854 × 18.5²) = 2150.4 cu.in. This was replaced in England, in 1826, by the imperial bushel (2,218.192 cu.in.), which was then made the legal bushel.

LIQUID AND DRY MEASURE (GREAT BRITAIN)

4 gills	= 1 pint	34.659 cubic inches
2 pints	= 1 quart	69.318 cubic inches
4 quarts	= 1 gallon	277.274 cubic inches
2 gallons	= 1 peck	554.548 cubic inches
4 pecks	= 1 bushel	2218.192 cubic inches

The Coal Age Pocket Book

There is no separate standard for liquid and dry measures in Great Britain, both being referred to the same unit or standard, which is the imperial gallon (277.274 cu.in.).

MEASURE OF TIME

60 seconds	= 1 minute
60 minutes	= 1 hour
24 hours	= 1 day
7 days	= 1 week
365 days	= 1 common year
366 days	= 1 leap year
12 calendar months	= 1 calendar year
100 years	= 1 century

Commonly speaking, **a day** is marked by one complete revolution of the earth on its axis, and **a year** by one revolution of the earth in its orbit about the sun. Unfortunately, however, the earth does not make an even number of turns on its axis, while making one complete revolution in its orbit. There are approximately 365¼ revolutions on the axis to a single revolution in the orbit.

In order to compensate for this eccentricity and make the calendar year conform as closely as possible to the solar year, so as to preserve uniformity in the return of the seasons, it was necessary to add one day to the calendar every fourth year, except the closing year of the century. Thus, the **common year** of 365 days was supplemented by a **leap year** containing 366 days.

The "Gregorian" calendar, established by Pope Gregory XIII (1582) and generally adopted in Great Britain and elsewhere (1752), replaced the "Julian" calendar and, in dropping 10 days by making Oct. 5, Oct. 15, 1582, restored the equinoxes to their proper date. To obtain closer correspondence of the calendar and solar years, the closing year of each century, 1600, 1700, etc., was made a common year, although these would be leap years in the regular course.

The Day—A day is the interval of time marked by two successive transits of a heavenly body across a given meridian, caused by the revolution of the earth on its axis.

The **solar day** (24 hr., 0 min.) is the time interval marked by two successive transits of the sun across the meridian.

The **sidereal day** (23 hr., 56 min.) is the time interval marked by two successive transits of a fixed star across a given meridian.

The Month—The calendar year has been arbitrarily divided into 12 months, in correspondence to the "number of moons" or the revolutions of the moon about the earth in a solar year. But, since 365 days are not equally divisible by 12, it was necessary to make an unequal division, as follows:

January	31 days	May	31 days	September	30 days
February	28 days	June	30 days	October	31 days
March	31 days	July	31 days	November	30 days
April	30 days	August	31 days	December	31 days

The extra day required in a leap year is added to the month of February, making 29 days in that month every leap year, instead of 28 as in the common year.

Inquiries of General Interest

Miners' Compensation Act

Referring to the discussion in *Coal Age* relating to the compensation of miners as provided by the recent act of the Pennsylvania Legislature and the effect on the constitutional rights of the miner as an individual, I would like to submit a question to the readers of *Coal Age* asking them for their opinion in regard to the effect of this act on the miner who avails himself of the option of rejecting its provision, preferring to hold himself free for the exercise of his constitutional right to apply for redress to the district courts, in case of accident or injury in the performance of his regular duties in the mine.

To illustrate the point I have in mind, permit me to anticipate both the time and ratification of this act and to infer that it has become operative as it now reads. Then, assuming that the operator or employer avails himself of the option of accepting or rejecting the provisions of the act, he has simply to notify his employees to that effect, in writing, and to file the same notice with the State Bureau of Workmen's Compensation of the Department of Labor and Industry, within ten days after such service and before any accident has occurred in the mine.

I do not mean to infer that an employee is legally compelled to follow the example of his employer in accepting the provisions of the act. If he desires to maintain his constitutional rights, he has the option of rejecting the provisions of this act and seeking employment elsewhere. But by the reading of the act (sec. 302), the failure on the part of an employee to reject the act implies its acceptance, and the law construes it as such an acceptance.

The question I would like to ask is this: Does not this proviso of the act give the employer the power of dictating to those whose conditions and circumstances compel them to comply with his choice of the conditions under which they must serve while in his employ? In other words, does it not give the employer the power to dictate to his employees the conditions under which all operations in his mine shall be conducted, irrespective of the constitutional amendment? I would characterize this as a legal "duress," because it empowers the employer to compel an employee's compliance with certain demands, however unwilling the latter may be because of the exigencies of his condition, which leave him no alternative but to obey the dictates of his employer. As I understand it, the new act sanctions such compulsory compliance. If I am wrong, I shall be glad to be set right in this matter. A. M. INER.

——, Penn.

Correspondent has raised an interesting question, although in our opinion he has overestimated the meaning of the act. Sec. 302 of Art. 3 of this act reads as follows:

In every contract of hiring made after Dec. 31, 1915, and in every contract of hiring renewed or extended by mutual consent, expressed or implied, after said date, it shall be conclusively presumed that the parties have accepted the provisions of Art. 3 of this act and have agreed to be bound thereby, unless there be, at the time of the making, renewal or extension of such contract, an express statement in writing from either party to the other, that the provisions of Art. 3 of this act are not intended to apply, and, unless a true copy of such written statement, accompanied by proof of service thereof upon the other party, setting forth under oath or affirmation the time, place and manner of such service, be filed with the bureau within 10 days after such service and before any accident has occurred.

Every contract of hiring, oral, written or implied from circumstances, now in operation, or made or implied on or before Dec. 31, 1915, shall be conclusively presumed to continue subject to the provisions of Art. 3 hereof, unless either party shall on or before said date, in writing, have notified the other party to such contract that the provisions of Art. 3 hereof are not intended to apply, and unless there shall be filed with the bureau a true copy of such notice, together with proof of service, within the time and in the manner hereinabove prescribed: Provided, however, that the provisions of this section shall not be so construed as to impair the obligation of any contract now in force.

In our understanding of the act as it reads, either party to a contract of employment has the option of accepting or rejecting the provisions of Art. 3 of the act, notice of such acceptance or rejection being given in writing to the other party and likewise filed with the bureau, as stated in the act. Or the acceptance or rejection of the act, on the part of an employee, may be implied if he continues to serve his employer after having received due notification in writing of the latter's acceptance or rejection of the provisions of the act, provided the said employee fails to notify his employer, in writing, of his own acceptance or rejection of the same act.

That is to say, if an employee makes no response to the written notice of his employer his silence is an implied agreement to accept or reject the provisions of the act, in common with the choice indicated in the notice he has received. On the other hand, if an employee chooses to pursue a different course from that of his employer he must notify the latter, in writing, of his election in respect to the act, and file a copy of such notice with the State Compensation Bureau, in accordance with the requirements of the act, within ten days of the time of serving the original notice.

The law should not be interpreted in the sense of a compulsory act, as suggested by correspondent. On the contrary, the intention of the act is quite the reverse, providing, as it does, the option of accepting or rejecting its provisions, as either party to the contract may elect. For, assuming an employer accepts the provisions of the act, any employee who so desires can reject its provisions by giving due notice in writing to his employer and filing the same with the bureau. He can then continue to serve his employer, although having rejected the provisions of the act. In that case, however, he is not entitled to recovery for injury, except through due process of law as before the act was in force.

Coal Age will be glad to have its readers discuss this aspect of the law further. An interesting question would be, In case an employer rejects the provisions of the act, could one of his employees, by accepting the said provisions of the act, recover from the employer in case of accident?

Examination Questions

Recent Iowa Examinations for Hoisting Engineers

(*Selected Questions*)

Ques.—How can you tell when the valve of an engine has lead, without opening the chest, if there is no punch mark to go by?

Ans.—An indicator card taken from the cylinder of the engine will show, by its point of compression and compression curve, how much lead the valve has been given. Without reference to the indicator card, however, the simplest method of determining this question is to rotate the engine to a point just short of dead-center. Then, having opened the drip-cock, at the end of the cylinder occupied by the piston, "crack" the throttle. That is to say, open the throttle just a crack to admit steam sufficient to blow through the cylinder and escape by the drip-cock, without moving the engine. If steam escapes at the drip-cock in this position, before the piston has reached the end of its stroke, it indicates that the valve has a certain lead. To determine approximately how much lead there is to the valve, rotate the engine backward from this point and observe when steam ceases to escape at the drip-cock. In this answer, we assume that there is no leakage of the valve, which would of course interfere with the test.

Ques.—If the length of the stroke of an engine is 2.5 ft. and the piston speed 900 ft. per min., what is the number of revolutions?

Ans.—The question intends to ask how many revolutions does the engine make in a minute. The number of strokes per minute is found by dividing the piston speed (feet per minute) by the length of stroke in feet; thus, $900 \div 2.5 = 360$ strokes per min. Since an engine makes two strokes to every revolution, the number of revolutions per minute is $360 \div 2 = 180$ r.p.m.

Ques.—Which will stand the greatest inside lap, a condensing or a noncondensing engine?

Ans.—Inside lap to a valve means an earlier closing of the exhaust port, when compression begins in that end of the cylinder. A condensing engine will stand a greater inside lap than a noncondensing engine, because of its greater range of pressure, which extends from below the atmospheric line to the full cylinder pressure. An earlier point of compression on the indicator card of a condensing engine will show a less percentage of loss in the indicated power of the engine than would be the case in a condensing engine under the same conditions.

Ques.—If you were in charge of a boiler and the glass water gage should be broken, what would you do?

Ans.—Close the lower cock of the gage and then the upper. For this purpose, there should be kept in the engine room an iron rod of suitable length and provided with a shank that will permit these cocks to be turned without the person being scalded by the escaping steam. If the upper cock were to be closed first, a spray of scalding water would be thrown from the lower cock. To avoid this, the lower cock must always be closed first. The engineer should keep on hand a supply of gage glasses, and insert a new glass at once in place of the one broken.

Ques.—What is an eccentric?

Ans.—An eccentric is a circular disk having a grooved circumference in which is fitted a ring that is made fast by a suitable connection to the end of the eccentric rod. The eccentric is mounted on the crankshaft, the center of the disk being at a distance from the center of the shaft equal to half the throw of the valve. The eccentric serves the same purpose as a crank to throw the valve backward and forward at each revolution of the shaft, the eccentric disk revolving within the ring that encircles its circumference.

Ques.—What are the results of the forming of scale in a boiler, and how would you prevent the formation of scale?

Ans.—The formation of scale in a boiler reduces its efficiency. The scale prevents the free transmission of the heat of the furnace to the water within the boiler and decreases the generation of steam per pound of fuel burned. Scale is also a menace to the safe operation of the boiler. Boiler plates covered with scale are apt to become overheated, and it frequently happens that the cracking of the scale allows the water to come suddenly into contact with the red-hot iron, when an explosion is almost sure to follow.

The best means of preventing the formation of scale in a boiler is to use as pure water as possible. All feed water contains more or less sediment, which is liable to accumulate from time to time in the boiler. To avoid this the boiler should be partly blown off at frequent intervals, the frequency depending on the amount of sediment in the water. Where this sediment accumulates as mud in the bottom of the boiler or in the mud drum, the boiler should be completely blown off at regular intervals, say at least once a week, and the accumulated sediment removed from the boiler by scrapers.

Where the water contains salts, such as carbonates or sulphates of lime and magnesia, these are precipitated by the boiling of the water. The precipitated salts form a hard crustation or scale that adheres firmly to the boiler plates and tubes. Sulphate of soda is frequently used in waters containing a small quantity of salts of the alkaline earths; it reduces these to a soluble sulphate of soda and carbonate of lime and magnesia. The former is carried in solution in the water, while the latter falls as a light sediment that does not scale and is readily blown out of the boiler.

Feed-water heaters assist the purification of the water entering the boiler. It has been found of advantage to add a small amount of petroleum or coal oil to the feed water. The oil has the effect of coagulating the sediment and preventing to a considerable degree the formation of scale. All feed water containing impurities should be subjected to analysis to determine its best treatment.

Coal and Coke News

Washington D. C.

Van H. Manning, chief of the Bureau of Mines in an interview given out here, takes the view that the bureau is serving an unknown and valuable end in preparing a corps of men who would be at once available for war hospital srevice, should such a need arise.

"In 48 hours," he says, "50,000 trained first-aid-to the injured experts could be mobilized in the great mining states of the country. I mean the trained mine rescue crews. Since 1908 the Bureau of Mines has done extensive demonstration and training work among men in the mining companies throughout the country. Every mine of importance now has its corps of trained rescue workers. These men are thoroughly expert in all sorts of bandaging, treatment of minor fractures, sterilization of wounds and probing for foreign objects in the body.

In addition they are trained to use the oxygen helmet which will permit them to enter places where the air is too poisonous to be breathed. In all mining states there is an annual mobilization of these potential hospital workers. Competitive drills are performed by the crews. This keeps the men in perfect training, accustoms them to working together, and insures the certainty of quick mobilization in time of war.

Another important feature of a hospital service and one for which we are directly responsible is base railroad cars containing the necessary supplies and bunks for the first aid corps. We have eight such cars—a good nucleus for a complete service in wartime—and with scarcely any change in apparatus they would be ready to carry the crews as near a battle front as need be."

Report on Corporation Legislation

The Federal Trade Commission has issued a report prepared by the Bureau of Corporations regarding state laws relating to corporations organized under the laws of other states. It collects the laws of all states regarding the conditions under which such corporations may do business, etc. A companion report just issued details the main points in the laws of the Southern and Southwestern states for the taxation of corporations. Both reports are of considerable interest.

HARRISBURG, PENN.

About a year ago a medical inspection in the anthracite region showed that in one of the Nanticoke schools a large percentage of the children were tubercular or were subject to tuberculosis. This report was taken up by Dr. S. D. Dixon, commissioner of health of the state, through his bureau of housing of which John Moliter, a Philadelphia architect is the head. From time to time Moliter visited this section and by his own plan his reports, particularly his recommendations, have been translated for the foreign papers having a large circulation in the Nanticoke region.

First there was an investigation of the housing conditions, showing that the tubercular condition of the children, and other signs of poor health were easily traceable to the great insanitation and disorder that prevailed. Subsequent visits followed up the recommendations that were made. Officials of the operating coal company, coöperated with Mr. Moliter, who now reports to the state commissioner, with much satisfaction that the district is on its way to great improvement.

As a result of this spirit of coöperation maintained by the head of one of the largest coal companies, additional residence sites have been opened up and sold cheaply on easy terms to the employees and at present 17 houses are under construction, besides a large Lithuanian church. These will help to relieve the overcrowding among the foreigners, one of the chief faults. It is also planned to open other blocks for building purposes as soon as the working people are in a position to proceed with the financial end of the undertaking.

The district has also improved by the cleaning up of dumping grounds, repairing of underground drains and the removal of surface drains and the cleaning up of cattle and hog pens. Several suspicious wells and sources of water supply have also been abandoned according to instructions.

Through the State Health Department's interest Mr. Molitor first started his work in the Nanticoke district in March of this year and has followed it up with the gradual process of education, recommendations, urging and threats of litigation, which have combined to bring about this promising result.

PENNSYLVANIA

Anthracite

Pottsville—Judge Brumm on Oct. 21 adjourned court at noon, and with a dozen state mine inspectors and engineers visited the Kehley Run Colliery, where it is alleged the removal of pillars will sink millions of dollars worth of real estate.

Hazleton—It is stated that in a colliery of the G. B. Markle Co. at Jeddo recently a miner, William Meehan, found a perfectly formed petrified snake. This is held as evidence by some people as upsetting the theory that coal was formed when only vegetable life existed on the earth.

The Lehigh Valley Coal Co. has announced that it expects soon to commence extensive stripping operations in this vicinity and at Buck Mountain and Oneida. It is expected in this way that large quantities of anthracite will be taken out by this labor-saving method, while at the same time employment will be given to many men.

Scranton—Supt. Weber, of the Board of Education, has reported that 25 students had enrolled in the night school to study mining. The instructor is Frank Gleason, a graduate of State College and a practical mining man. The text-book used is by Joseph J. Walsh, of Wilkes-Barre, mining inspector in the Ninth District.

Mahanoy City—The Buck Mountain and Vulcan collieries of the Lehigh Valley Coal Co. were recently compelled to suspend operations on account of a scarcity of cars. Most of the other operations throughout the immediate vicinity, however, have been enabled to work full time for some weeks past.

Catawissa—The series of freshets and absence of low water on the river throughout the summer have made the season a favorable one for coal dredges. The quantity of coal removed from the river since spring exceeds the product during any other year on record. The comparatively high water has enabled the dredges to move wherever they pleased. The field of operation of these machines has been accordingly much enlarged.

Swoyersville.—Frank H. Hemelwright, general manager of the Temple Coal & Iron Co., has announced that his firm will recompense the owners of property on Slocum street, Swoyersville, damaged by a mine cave caused by quicksand running into the workings. Two houses of Thomas Quigley were engulfed to the second story and irreparably damaged. Two neighboring houses owned by John Hayden were also damaged. Mr. Hemelwright stated that the hole through which the quicksand ran into the workings was small.

Pittston—It is understood by local officials of the Lehigh Valley Coal Co. that this firm has decided to purchase automobiles for the use of many of its division officials within the next six months. The division superintendents already have cars purchased by the company. Electricians, efficiency men and engineers will likely come under the new order.

Another of the spasmodic subsidences on Upper William street has endangered the tracks of the Moosic line of the Scranton Railway Co. and has caused the company to transfer passengers at the Erie crossing. The disturbed surface overlies the workings of the Pennsylvania Coal Co. There has been caving in this neighborhood for over a year.

Wyoming—Three hundred employees of the Mt. Lookout Coal Co. recently attended the fourth annual banquet of the Mt. Lookout First Aid Corps here. James H. Evans, of Forty Fort, was toastmaster, and the speakers were local clergymen and mining officials.

Bituminous

Harrison—The Quemahoning Creek Coal Co. with large operations in Somerset County has purchased some new machinery to be installed at its plant here. A new tipple is being erected and equipped with a new picking table, which will enable the company to increase its output.

Allenvale—Two hundred mine workers employed by the Valley Smokeless Coal Co. walked out for the second time recently. The trouble was over the scales used for check-

weighing. The miners at the first strike demanded a checkweighman at the tipple and a pit committee. This was allowed by the company. As soon as the checkweighman got on the job he advised the miners he thought the scales were short weight. This resulted in a second strike. At a conference between the officials of the company and the men it was decided to get the State Sealer of Weights and Measures to test the scales which were found correct. Not being satisfied with the test the miners decided to run a few cars of coal from the mine and have them weighed. To this the company agreed, and as the scales were again found to be correct the miners returned to work.

Connellsville—The production of coke in the Connellsville region recently amounted to 421,000 tons, with shipments amounting to 422,000 tons. These are decided increases over previous weeks, and ovens are being fired as fast as the labor to operate them can be secured.

Kittanning—It is reported that the Kittanning Iron & Steel Co.'s plant will start in full about Dec. 15, giving employment to 800 men. The Furnace Run Coal Co. near this town has announced that it needs 500 men immediately.

WEST VIRGINIA

Charleston—According to Earl Henry, chief of the state department of mines, the labor shortage in the mining fields, especially in the northern part of West Virginia, is growing acute, and unless more men are found within a short time many interests besides the mines will be affected. Mr. Henry states that insufficient labor makes it impossible at present for many mines to be operated to a point where orders can be filled.

The United States Coal & Coke Co., operating in McDowell County, has withdrawn its suit against State Compensation Commissioner Lee Ott asking a mandamus to compel him to release the company as a subscriber to the compensation fund. The company dismissed the suit, it announced, to avoid creating the impression that it was seeking to escape the payment of its obligations or to destroy the state compensation fund, although the suit was brought because the company believes it has the right to carry its own compensation insurance.

The old mine of the Stillman Coal Co. on the West Virginia side of the Ohio River will be put in operation within a few weeks, after a suspension of several months. This mine was recently leased by the coal company, and the leasee is said to be in possession of orders for its product. Twenty men are now engaged in cleaning out the mine and when this work is completed a force of 100 miners will be employed.

Moundsville—The Mound mine recently resumed operations and will continue for some time. Only one side of the mine, however, will be operated and no shipments will be made, the output being for local trade only.

Bluefield—The Norfolk & Western R. R. during the month of September handled 2,910,221 tons of coal, compared with 3,005,618 tons during August. Every month since last June has marked an increase in the amount of tonnage handled with the exception of September, which fell short of August shipments. It is believed that September would have shown another high record had it not been for five days of congestion at Lambert Point, which curtailed the output of the mines considerably. In any case, however, the tonnage of the road has increased 1,871,007 tons in four months time. It is believed, also, that the total shipments to the end of October will be equal to all the coal shipped during the year 1914.

ALABAMA

Birmingham—An explosion occurred recently at the Banner mine at a time when no one was in the workings. The cause of the explosion is unknown. It was thought for a time that fire had been set to the timbers and mine, but later investigations proved this not to be the case. Damage due to the explosion appeared to be confined to a small portion of the mine workings.

KENTUCKY

Louisville—Local shippers, coal operators and commercial organizations as well as railroad authorities have received appeals from the Interstate Commerce Commission asking that they do all in their power to expedite the use of cars so as to rob the present car famine of as many of its drawbacks as possible. It is urged that the railroad officials do what they can to prevent congestion of cars at terminal points and that shippers unload them as expeditiously as possible so as not to keep them out of service.

After a "suggest-a-name contest" which the Harlan Coal Co., operating mines in Harlan county, began in August, ran for about two months the company has selected "Black Beauty" as the trade name for the coal it handles. The provisions of the contest were stated to about 4,000 retail dealers in the 16 states in which the company does business. More than 900 names were received in response. Nine dealers suggested the name adopted and the prize, a car of "Black Beauty" lump was awarded to Fisher Brothers, of New Paris, Ind., the first of the nine to offer the suggestion.

Stearns—Mines around here are in regular operation and vacant miner's homes are being rapidly occupied. Construction of a new tipple at Mine No. 4 is under way and additions are being made to the tipple at Yamacraw.

Whitesburg—The Kentucky Block Coal Co., operating near Elkhorn City on the newly completed Carolina, Clinchfield & Ohio R.R., will soon begin its initial shipments to South Atlantic coast points. A mining town is being constructed and the company will have an initial capacity of 2,000 tons daily.

Middlesboro—Handling of the rush coal business in this section was the principal matter considered at the recent meeting here of the Southern Appalachian Coal Operators' Association. Fifty operators were present, including representatives from Cincinnati, Covington, Louisville and Knoxville.

Hazard—The Blue Grass Coal Co. is rapidly getting into readiness to make its first shipments of coal from the new plant immediately below Hazard on the Louisville & Nashville R.R. The company will have a daily capacity of 1,000 tons, which will be increased from time to time.

OHIO

Bellaire—What is said to be a record for the output of coal from one mine in Ohio was recently established at the No. 1 mine of the Rail & River Co., when 2,631 tons were mined and sent out. The output for three consecutive days was 7,500 tons. About 450 men are employed in this mine.

Columbus—The Modern Coal Mining Co., has started loading coal at the stripping operation at Parlette, Jefferson County. The initial capacity is 300 tons daily which will gradually be increased to 800 tons.

INDIANA

Princeton—After three-weeks idleness the 350 men of the Princeton mine who have been on strike have returned to work and several hundred more have resumed in the Terre Haute field. Points at issue, involving discharge of two men, will be left to the International Board of the United Mine Workers, work being resumed pending adjudication of the contentions. The mines here and at Terre Haute are owned by the Deep Vein Coal Co., of Terre Haute.

Sullivan—After a shut down of three weeks, the Chicago-Carlisle Coal Co.'s mine has been reopened for work, pending a settlement of a difficulty resulting from the removal of a curtain from one of the mine entries, thus allowing bad air to get into the rooms.

Vincennes—Option has been taken on 3,000 acres of land between this city and Lawrence, Ill., in the interests of a large coal company. The owners are to receive $25 an acre. In drilling for oil in this field seams of coal of varying thicknesses have been found at depths of 300 to 700 ft.

ILLINOIS

New Baden—The statement that the New Baden mine of the Southern Coal, Coke & Mining Co. is to be closed and customers supplied from the Little Oak and Shiloh mines near Belleville, is said to be incorrect. The company has so many orders for New Baden coal that it is said the mine will be operated regularly and indefinitely. The Little Oak and Shiloh operations are also working regularly.

O'Fallon—Copper wire to the value of $300 was stolen recently from the Taylor Coal Co., which operates the St. Ellen and Ridge mines. The wire was used for power transmission between the mines. Tracks showed that the thieves came in a wagon the first night and took part of the wire and returned the next night in an automobile and finished the job.

Carterville—W. E. Trautmann, of East St. Louis, receiver for the Carterville Coal Co., on Oct. 20 sold the Burr C mine and holdings here at auction. It was bid in by the Mississippi Valley Trust Co., of St. Louis for $43,000 to protect its mortgage for $38,000 and accumulated court costs. This leaves an unpaid indebtedness of about $40,000, of which $20,000 is wages due employees. The mine has been closed down since last March. Frederick Vierling, trust officer of the Mississippi Valley Trust Co., announces that no plans have been made for resuming operations. The mine employs 300 men when working.

MISSOURI

Columbia—A 3-ft. bed of coal was discovered at a depth of 20 ft. recently by workmen digging footings for the basement walls of a moving picture theatre. Although large portions of Boone County are underlaid with coal measures at varying depths, this is the first time that coal has been found inside the corporate limits of Columbia. This coal will not be developed.

IOWA

Des Moines—The new Iowa Industrial hospital will be opened within 60 days. Remodeling has been inaugurated and an entire expenditure of $100,000 will be made. The institution is to be operated especially for the convenience of coal miners and is to be equipped with special facilities to care for accident cases.

COLORADO

Greeley—It has been stated that the American Coal Tar Products Co. has been experimenting with coals from the mines about Erie and Frederick and that it contemplates erecting a factory to manufacture analines and other coal-tar products therefrom.

WYOMING

Kemmerer—The mine of the Roberts Coal Co. near town was destroyed by an explosion recently and up to the present time there is no clew as to whom the guilty parties may be. The mine had been closed Saturday after the day's work, and the door to the mouth of the tunnel locked. Underneath the door was a small hole in which tools were kept, and from here an axe was taken with which the door was evidently broken in. The rope attached to the mine car was cut and the car run to the back of the mine. There was a quantity of powder and fuse there which was exploded, completely wrecking the inner part of the property.

PERSONALS

Carl Scholz, president of the Rock Island Coal Mining Co., left Chicago Oct. 18 for Oklahoma to spend a short time at the company's mines.

M. Marks, field representative of the Hirsch Electric Lamp Co. of Philadelphia, is in the Pittsburgh district supervising some new installations of his company's equipment.

H. J. W. Reed, assistant inspector of mines of Kentucky, is out on his regular inspection of the mines in his territory, which includes Breadhitt, Laurel, Lee, McCreary, Morgan, Perry and Rockcastle counties.

J. M. Roan, of Athens, Ohio, mine inspector, assisted by several deputies and the mine rescue car opened Poston Mine No. 6 of the Poston Consolidated Coal Co. recently. The mine had been sealed for six weeks because of a fire. Upon opening the mine and entering the entries with helmets it was found that the fire was extinguished and but little damage had been done. The mine will be placed in operation soon.

OBITUARY

George Kroeger, of Chicago, in Boonville, Ind., for the past year optioning coal lands in that vicinity, recently died suddenly of heart disease. A daughter living in Chicago survives him.

Horace G. Williams, a mining engineer of prominence, died recently in Philadelphia after an illness covering two years. Mr. Williams was 55 years of age, having been born in Minersville, Penn. After being employed in his professional capacity in that vicinity for a number of years, he became interested in the coal and lumber business in the South. He was at one time president of the Street Railway Co., of Portsmouth, Va., and also acted as receiver for the Beaver Creek Railroad & Lumber Co.

TRADE CATALOGS

Lea-Courtney Co., Newark, N. J. Catalog H-2. "Centrifugal Pumps." Illustrated, 64 pp., 6x9 in.

Coppus Engineering & Equipment Co., Worcester, Mass. Catalog. "Coppus Turbo Blower." Illustrated, 40 pp., 6x9 in.

The Cutler-Hamer Mfg. Co., Milwaukee, Wis. Loose Leaf Catalog. "Electric Controlling Devices." Illustrated, 4½x7½ in.

Templeton, Kenly & Co., Ltd., 1020 S. Central Ave., Chicago, Ill. Bulletin Catalog No. 115. "Simplex Jacks." Illustrated, 24 pp., 6x9 in.

Chicago Pneumatic Tool Co., Fisher Building, Chicago, Ill. Bulletin No. 130. "Lubrication of Pneumatic Tools." Illustrated, 4 pp., 6x9 in.

The Electric Storage Battery Co., Philadelphia, Penn. Handbook H L. "Low Voltage Isolated Electric Light and Power Plants with the Chloride Accumulator." Illustrated, 52 pp, 6x9 in.

PUBLICATIONS RECEIVED

"The Second Annual Report of the State Inspector of Coal Mines for Colorado." Unillustrated, 82 pp., 6x9 in.

"Annual Report of the Inspector of Mines for Ohio, 1913." Unillustrated, cloth bound volume of 486 pp., 6½x9¾ in.

Department of the Interior, U. S. Geological Survey. "The Production of Asbestos in 1914." By J. S. Diller. Illustrated, 9 pp., 6x9 in.

Department of the Interior, U. S. Geological Survey. "The Production of Graphite in 1914,' by Edson S. Bastin. Unillustrated, 15 pp., 6x9 in.

Department of the Interior, U. S. Geological Survey. "The Production of Mineral Paints, in 1914." By James M. Hill. Unillustrated, 19 pp., 6x9 in.

Department of the Interior, U. S. Geological Survey. "The Production of Talc and Soapstone in 1914," by J. S. Diller. Unillustrated, 6 pp., 6x9 in.

Department of the Interior, U. S. Geological Survey. "Sulphur, Pyrite and Sulphuric Acid in 1914." By W. C. Phalen. Unillustrated, 18 pp., 6x9 in.

Department of the Interior, U. S. Geological Survey. "Gold, Silver, and Copper in Alaska in 1914," by Alfred H. Brooks. Unillustrated, 10 pp., 6x9 in.

Department of the Interior, Bureau of Mines, Bulletin 72. "Occurrence of Explosive Gases in Coal Mines." By M. H. Darton. Illustrated, 248 pp., 6x9 in.

Canada Geological Survey, Department of Mines. Memoir 59. "Coal Fields and Coal Resources of Canada." By D. V. Dowling, illustrated, 174 pp., 6½x9¾ in.

Department of the Interior, U. S. Geological Survey. Bulletin 621A. "Field Apparatus for Determining Ash in Coal," by S. E. Lesher. Illustrated, 12 pp., 6x9 in.

Department of the Interior, U. S. Geoligical Survey. "Gold Silver, Copper, Lead and Zinc in the United States in 1914," by J. P. Dunlop. Unillustrated, 24 pp., 6x9 in.

Department of the Interior, U. S. Geological Survey. "The Production of Manganese and Manganiferous Ores in 1914," by D. F. Hewett. Unillustrated, 16 pp., 6x9 in.

Department of the Interior, U. S. Geological Survey. "The Production of Salt, Bromine and Calcium Chloride in 1914," by W. C. Phalen. Unillustrated, 15 pp., 6x9 in.

Department of the Interior, U. S. Geological Survey. "The Production of Fluorspar in 1914, with a note on Cryolite." By Ernest F. Burchard. Unillustrated, 6 pp., 6x9 in.

Industrial Commission of Ohio. Department of Investigation and Statistics, Report No. 3. "Statistics of Mines and Quarries in Ohio in 1913." Unillustrated, 93 pp., 6½x9¼ in.

Department of the Interior, U. S. Geological Survey. "Copper, Silver, Lead and Zinc in the Central States in 1914." By B. S. Butler and J. C. Dunlop. Unillustrated, 100 pp., 6x9 in.

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INDUSTRIAL NEWS

Toronto, Ont.—The Brule Lake Coal Co., Ltd., has been incorporated by the Mackenzie & Mann interests, with head office in Toronto, Ont., and an authorized capital of $200,000.

Little Rock, Ark.—The Thomas Adams Fuel Co., of Little Rock, Ark., has been incorporated with a capital stock of $10,000. The incorporators are T. W., T. O., V. C. and F. E. Adams.

Philadelphia, Penn.—The launching has just taken place of the "Virginia," a coal carrying ship built for the Pocohontas Coal Co. The vessel has a capacity of 7,000 tons exclusive of bunker coal.

New Orleans, La.—Collier No. 1, property of the Monongahela River Consolidated Coal & Coke Co., which was sunk at this port in the hurricane of Sept. 29, at a loss of $75,000, will be raised. Divers are now at work.

Clarksburg, W. Va.—The Balkan Coal Co. was recently organized with a capital stock of $50,000. The incorporators are J. E. Long, C. B. Johnston, B. H. Monroe, Fred Radford and M. Stuart, of Clarksburg, W. Va.

Guthrie, Okla.—The Milton Coal Mining Co. has been incorporated with a capital stock of $14,000. The incorporators are Henry E. Johnson, of Perry; J. E. Woodworth, R. J. Conneway and E. S. Lowther, of Guthrie.

Pittsburgh, Penn.—The mining territory formerly covered by the Philadelphia office of the Lidgerwood Mfg. Co. will, after Nov. 1, be handled by W. J. Johnson, sales manager of the Pittsburgh office of the same company.

Charleroi, Penn.—Plans have been drawn for the erection of 400 new coke ovens at the Allicia works of the W. Harry Brown Co. These plans will shortly be put into effect and work on the new ovens is expected to commence within a month.

Welch, W. Va.—The Fire Creek Coal Co. has been organized with a capital of $250,000 and chief works in Raleigh County, West Virginia. The incorporators are Willam Leckie, A. E. Jennings, J. H. Jennings, A. F. Leckie and W. B. Beale, all of Welch, W. Va.

Bellaire, Ohio—The property of the Johnson Coal Co., consisting of a leasehold mine and the machinery and equipment thereof, together with a number of tenement houses, will be sold at public auction by C. W. Dickens, trustee, for cash on Nov. 19.

Welch, W. Va.—The Douglas Coal Co. has been organized with a capital of $150,000 and with principal works in the Dry Fork district of Raleigh County. The incorporators are William Leckie, A. F. Leckie, W. B. Beale, J. H. Williams, A. E. Jennings, all of Welch, W. Va.

Buffalo, N. Y.—Work on the reconstruction of the water coal dock of the Delaware, Lackawanna & Western R.R. Co. has begun, so that the end of the long dispute appears to be in sight. The new dock will replace the old one, being a trifle north of it, as directed by the Secretary of War.

New Orleans, La.—The Cahaba Red Ash Coal Company, of this city, is offering as a stimulation to winter trade a patent coal scuttle, free to every purchaser of a small quantity of Cahaba or lump coal. The company reports that it has distributed hundreds of the scuttles since the advent of cool weather two weeks ago.

Henderson, Ky.—Judgment for $2,000 as damages has been awarded the Keystone Mining Co., of this city against the Louisville & Nashville R.R. in the circuit court. The plaintiff sought damages of $50,000 alleging that the defendant company refused to switch coal loaded at the plaintiff's mine to local manufacturing plants.

Lexington, Ky.—The Kentucky Coal Lands Co., of New York has won its suit in the Federal Court against the General Development Co., of Pennsylvania, which involved the [illegible]-mi. boundary line of an extensive mineral and timber tract in Letcher county. Many thousand dollars worth of land was involved in the case which was on trial for two weeks.

Louisville, Ky.—Coal tonnage on the Louisville Division of the Illinois Central R.R. running into the western Kentucky field, for the month of September was the greatest in the history of the road. The haulage for that month was 298,545 tons of commercial coal. The nearest approach to this record was in October, 1914, when 267,760 tons were hauled.

Pittsburgh, Penn.—The Stauffer Chemical Co., through the Pittsburgh Industrial Development Commission, has taken title to 110 acres of land near Monongahela, Penn., and has 100 additional adjoining acres under option. An option has also been taken on coal land for the purpose of assuring the company of its own fuel supply. These coal lands are in Carroll Township, Washington County.

Columbus, Ohio—Monsarrat Bros., coal operator, with offices in the Hartman Building, Columbus, is planning extensive improvements at its mines, located at Hemlock, Ohio. The property is located on the Zanesville & Western R.R. and now produces 400 tons daily. The output of the property will be enlarged in the near future. The partnership is composed of Nicholas D. Monsarrat and C. R. Monsarrat.

Denver, Colo.—Complaint has been filed with the state public utilities commission charging the Colorado Midland, Midland Terminal and the Cripple Creek & Colorado Springs railways with unreasonable and unjust freight rates on coal shipped to the Cripple Creek district from the mines of the Grand Junction Mining & Fuel Co. and the Palisade Coal & Supply Co. The same companies filed similar complaints a short time ago against the Denver & Rio Grande Ry.

Ashland, Ky.—The Ashland Iron & Mining Co. will shortly start its No. 2 Furnace, closed since December, 1914, and also 72 coke ovens, idle about the same length of time. The furnace will employ 150 men, while 50 to 60 more will find work at the coke ovens. The coal mines of this company are running almost to capacity with a good demand for the product. A new operation was recently opened, shipments from which are just beginning to come in.

Whitesburg, Ky.—Coal operators throughout the Eastern Kentucky territory, including the main Elkhorn and Boone's Fork fields of Letcher County, report an increase of at least 30% since Oct. 1. Railroads, it is reported, have added a number of extra trains and are still pushed to handle the big increase. Thousands of miners are now employed in the mines throughout the eastern Kentucky field. Better prices prevail and operators are optimistic upon conditions.

Grafton, W. Va.—James A. Sincell has been awarded the contract for extensive improvements to be made by the Boat Run Coal Co. These improvements consist of the construction of a half-mile of electric haulage road and the building of two tipples, as well as making two openings and placing the timber in readiness to start work. This work is to be done on a 1,500-acre tract under lease to the company. It is expected that work will be started within two weeks.

Columbus, Ohio—Eastern Ohio coal operators recently asked the Public Utilities Commission to investigate rates of four railroads operating in the eastern portion of the state and to enter an order reducing the rates to a point where they will not be unreasonable and unjustly discriminatory. The petitioners are the Pittsburgh Vein Coal Operators' Association, and the railroads against which complaint is made are the Baltimore & Ohio, Pennsylvania, Wheeling & Lake Erie, and the New York Central.

Harrisburg, Penn.—The Department of Mines has just issued a statement covering the consumption of coal by trade local to the mines in the anthracite region for the period from 1903 to 1913. This statement shows that the increase in consumption has been entirely disproportionate to the increase in population. In 1903 the consumption was 1,373,167 tons, while in 1913 it was 1,943,238 tons. The increase has been gradual, although occasionally the amount would fall behind the previous year on account of a mild winter.

Chicago, Ill.—The property of the Dering Coal Co. of Delaware, situated in Vermillion County, Indiana, and in Fayette Township, Vigo County, Indiana, which was sold last May on foreclosure to Henry Russell Platt of Chicago, has been purchased by the J. K. Dering Coal Co. These properties include the old No. 6 mine near Durkee's Ferry, the old Willow Grove property just west of Clinton, 320 acres about a mile south of Durkee's Ferry and some other isolated tracts. Work will begin at once to sink a shaft at the old No. 6 mine to the 4th seam and the company expects to be taking out coal within 60 days.

Hazard, Ky.—A population of 10,000 is regarded as a probability for this city by next year because of the opening up on an extended scale of the mining field hereabouts. This will represent a growth in two or three years from a town of 300 or 400 people. At this time new plants are being opened up at Buffalo Creek, Glowmaur, Lothair, First Creek and Lennut, while the Louisville & Nashville is finishing work on a branch line into Buffalo Creek and First Creek. About half of the 500 cars of coal which the Louisville & Nashville is delivering daily into Winchester, Ky., comes from the Hazard field. This is soon to be largely increased as the railroad increases its capacity.

Coal Trade Reviews

General Review

Anthracite orders slowing down, but market still firm. Strong upward tendency in bituminous continues. Exports show moderate increase. Lake trade expanding with approaching close of navigation.

Anthracite—A touch of warmer weather has caused a slowing up in orders which has given the retailers a welcome opportunity to catch up on business. The market has not lost ground, but neither has it seen any important additional expansion during the week. Mines are on full-time basis, or as full as the inadequate car and labor supply will permit, and stocks at Tidewater are well cleaned up. Concessions on the circular are still occasionally noted, though prices are generally well maintained, and are notably stiffer than a few weeks ago. The irregular arrivals at the distributing centers are causing considerable confusion. There are still some conservative members of the trade who maintain that there are strong possibilities of a poor winter's business, due to rigid economy among the poorer domestic consumers.

Bituminous—The strong upward tendency continues. The paucity in both the labor and car supply, which is becoming steadily more acute, is the dominating feature of the market. It is noted that some of the steel interests, controlling their own fuel supply, are coming into the market for extra surplus tonnages. Requisitions on contracts are generally at the maximum, and some shippers are beginning to fall behind on their obligations. Prices are up from previous quotations. However, it is clear that competition is still keen for what spot business develops, though a little additional buying power would put the market in a strong position.

Exports.—A moderate increase in export shipments is noted, in spite of the heavy handicap of inadequate vessel tonnage. The pinch of the poor car supply has not been so keenly perceptible on foreign business, the roads giving preference to export tonnages in order to avoid vessel demurrage. Vessel rates have advanced even above the previous prohibitive levels, and tonnage is even more scarce than before with steamers difficult to obtain. Frequent inquiries are received from abroad, but the agencies are beginning to lose interest, feeling that it is scarcely worth while to bid so long as the vessel situation remains so unsatisfactory. Circular prices are nominally maintained at Tidewater, but good orders for prompt movement would no doubt shake out some concessions.

Lake Markets—The steady improvement continues, though conservative observers are inclined to regard the situation as abnormal in view of the fact that it is built up primarily on large war orders. However, it is undoubtedly a fact that there is a persistent expansion in manufacturing that is causing a steady increase in the coal consumption. The Lake trade is rather more active, and indications point to a rush of fair proportions over the closing period in spite of the growing scarcity of vessel tonnage. The return of milder weather conditions has caused a slowing up in domestic business which is falling somewhat behind expectations, but constructive factors predominate in the market generally, and colder weather gives indications of rush orders in the very near future. Prices on all grades are stronger, operators already well covered having advanced quotations sharply.

Middle West—The appearance of a period of relatively warm weather has brought some pressure on the domestic market, though the demand continues well distributed. Full circular prices rule generally, and there is no consignment coal on the market. Surpluses are well cleaned up, while the railroads continue absorbing a good tonnage and the market has not lost ground by any means. The higher temperatures have not seriously affected shipments out from the upper Lake ports; the movement for September showed a gratifying increase over the same month last year, but receipts are falling behind because of attractive offers made vessel owners for grain and iron charters.

A Year Ago—Cold snap starts the retail anthracite trade moving, but the mines continue short of orders. Bituminous outlook pessimistic. Cancellations the rule, and mines are reducing working schedules.

BUSINESS OPINIONS

Iron Age—Despite efforts of the larger steel companies to hold the demand in check, signs of a runaway steel market are increasing. They report orders coming in at such an enormous rate that all of them are being carefully considered before being accepted. On some classes of material it is a question of getting deliveries and not prices. This month will establish new records in the output of iron and steel, but in spite of the huge production the mills are getting farther back in deliveries. The extraordinary demand for open-hearth steel is bringing about conditions which prevailed several years ago under similar conditions.

Bradstreet—Save for a probably temporary setback to retail distribution caused by a spell of warm weather, progress in trade and industry continues of conspicuous proportions, with even greater gains apparently in store. In the larger lines cumulative expansion is the chief characteristic; retail merchants show a stronger propensity to buy ahead; the steel trade goes on making ground; prices on some finished products have been advanced, partly to keep buying within certain bounds; the long predicted scarcity of railway cars is an actual fact and a paucity of labor exists.

Marshall Field & Co.—Current wholesale distribution of dry goods continues to show a healthy gain over the corresponding period of a year ago. Mail orders and road sales are heavy for immediate delivery. Customers continue to be in the market in much larger numbers. Collections are above normal. The advancing prices in many lines of cotton, wool and silk goods reflect the firmness and upward tendency of prices in primary markets.

Boston News Bureau—The best evidence of business improvement is the glutted condition of some of the railroads. Western dispatches say that there are now more loaded freight cars standing still on the side tracks waiting to be moved than at any time in years. Atchison's loadings, for instance, are breaking all records. Without question, however, the feature of supreme moment is the continued demoralization of foreign exchange. Neither the $500,000,000 Anglo-French loan nor the liquidation of American held stocks for English account have been sufficient to hold up sterling exchange. The fact is New York is fast becoming the money center of the world. The flow of capital is in that direction.

Southern Lumberman—Reasons for the further advances in prices obtained for yellow pine lumber are not hard to find. Reports are uniformly to the effect that the demand is rapidly and steadily increasing. Railroads continue to buy, and in larger quantities. Rush orders are being received from retail dealers with such frequency as to cause wholesalers much concern about prompt delivery, and a number of mills in Mississippi-Louisiana territory are reported as turning down orders, particularly for rough stock. Car builders and implement manufacturers are also placing orders, and there is a heavy inquiry from the East. Shipment of 16 mills for the month of September shows that 418,388,70[illegible] ft. were produced in September, as against 384,590,700 ft. in August.

Dun—Even the change to milder weather did not materially lessen retail demands, and there are still many more points of gain than of loss in the general situation. This fact is made clear in reports from the principal centers, as well as by the various statistical gauges that measure business movements and volumes. Bank clearings outside of New York largely surpass those of recent years, gross railroad earnings are steadily rising, the upward trend of commodity prices is unchecked and the increase in commercial borrowing gives additional proof of trade expansion. Evidence of widening activity is apparent in nearly every important department and in localities where no sign of it was manifest a short time ago. Progress is more rapid, as it should be, in the industrial than in the trading field, and is most pronounced at cities where the manufacture of war supplies is now the leading occupation.

ATLANTIC SEABOARD

BOSTON

Spot market quiet, but contract demand active on Pocahontas and New River. Prices not as firm as were expected. Low prices on cars are in prospect for 1916. Georges Creek easy, but quality grades from Pennsylvania are active. Anthracite trade favorable.

Bituminous—The Hampton Roads coals are generally firm at $2.80@2.85, but this week has shown there are still some soft spots in the market. Two or three small orders for delivery the next 60 days have been closed on an alongside basis that is understood to net not over $2.75 f.o.b. and probably 5c. less. Spot business is so extremely quiet that all the agencies get into the competition when inquiry is made. Contract demand is good, enough newspaper comment on the possibility of car and labor shortage having reached New England buyers to make them actively interested in getting supplies forward. Export trade is also in good shape for the moment. The whole situation is just at the point where a little buying power would induce a near active market on Pocahontas and New River.

So far, Georges Creek is in sufficient supply to fill current orders, although the shippers are requiring somewhat longer notice than has lately been usual. They were, however, successful competitors for one of the few contracts that has come up during the week, and doubtless spot business is as attractive to them as to the shippers farther south.

Several of the Pennsylvania coals are really enjoying an active market. Some of the Cambrias have advanced 10c. since last reports and in a few cases are declining new business, particularly that which calls for delivery through the winter. Reports of labor shortage from some districts are almost alarming and apparently an increasing number of operators are conservative in their commitments from now on. The Somerset grades seem to be less affected thus far, though that region is usually among the first to feel any scarcity of cars. All the quality coals are now active, more of the consumers being reached all-rail and therefore more sensitive to rumors of slow movement. The last fortnight there has been a lot of doubling up on usual contract requirements and operators in many cases find themselves unable to take advantage of the small premiums that are now being offered for delivery from now to April.

Water Freights are also hardening a little on account of the increased contract demand; 85c. is the current quotation on boats of 2,500 tons upward, Hampton Roads to Boston. Long Island Sound barges are also in better demand, as high as 55c. having been paid lately from New York to New Bedford.

Anthracite trade is good in all directions. The weather has turned colder and retail demand is much improved. At the same time the companies are not discouraging new business and in most cases are very little behind on their orders.

Bituminous quotations, f.o.b. loading ports at points designated, are about as follows per gross ton:

	Philadelphia	New York	Baltimore	F.o.b. Mine
Clearfields	$2.25@2.75	$2.55@3.00	.....	$0.95@1.50
Cambrias and Somersets	2.45@2.95	2.70@3.20	.....	1.20@1.65
Georges Creek	2.92@3.02	3.22@3.32	$2.85@2.95	1.67@1.77

Pocahontas and New River prices, on cars Boston, are $3.50@3.73; Providence, $3.50@3.68; and f.o.b. loading port at Hampton Roads, $2.80@2.85.

NEW YORK

Anthracite market active. Mines feeling car shortage. Tidewater situation improving. Steam coals stronger. Bituminous demand increasing. Prices advance and car supply short.

Anthracite—There is considerable activity in the anthracite market. Present conditions are exceedingly healthy and the prospects for a continuation of same are bright. The mines continue to work full time whenever sufficient cars are available but even at that operators are unable to get out sufficient coal to meet requirements owing to labor scarcity. Some independent operators have enough orders on hand to keep them busy for the next month or six weeks. Shipments to the West are restricted owing to lack of box cars while scarcity of the small cars hinder shipments East.

Of the large sizes egg is weaker than stove or chestnut with occasional stray cargoes have sold at $5.20. Stove and nut are strong and there were reports that some shippers had secured premiums for the choice grades for quick delivery.

The steam size situation is becoming stronger. Pea is commanding full companies' circular and sometimes better. The poorer grades of No. 1 buckwheat were quoted during the week at $2.50 but the better coals are bringing the full circular.

Quotations, f.o.b. New York harbor, gross tons, are:

	Lower Ports		Upper Ports	
	Circular	Individual	Circular	Individual
Broken	$5.05		$5.10	
Egg	5.30	$5.20@5.30	5.35	$5.25@5.35
Stove	5.30	5.20@5.30	5.35	5.25@5.35
Chestnut	5.55	5.40@5.55	5.60	5.50@5.60
Pea	3.50	3.25@3.50	3.55	3.50@3.55
Buckwheat	2.75	2.25@2.75	2.80	2.25@2.80
Rice	2.25	1.85@2.25	2.30	2.00@2.30
Barley	1.75	1.50@1.75	1.80	1.75@1.80

Bituminous—Demand is on the increase and the Tidewater situation shows much activity. The demand has showed much strength and there has been a corresponding increase in prices. While there has been no evidence of a lack of supply as yet the scarcity of labor and shortage of cars are tending to bring about this condition. Many middle houses have had their representatives in the coal fields during the past week.

Loading docks in the harbor have small stocks and shippers find a ready market. Contract holders are taking their full quota and there is very little of the high-grade coals left for the spot market. Some shippers were greatly worried the early part of the week by the report that certain of the railroads entering New York were about to place an embargo on shipments. It was not expected however that this order would affect coal shipments.

Shortage of bottoms is striking hard at the export business but bunker demand continues heavy.

The cheaper grades of coal at tidewater are about 35c. higher than last week and some sellers are advising quick buying at those figures, as next week may see still higher prices. With the possible exception of George's Creek coals all grades have advanced from five to ten cents per ton.

Current quotations on various grades, f.o.b. New York harbor, gross tons, follow:

	South Amboy	Port Reading	St. George	Mine Price
Georges Creek Big Vein	$3.20@3.30	$3.20@3.30	$3.20@3.30	$1.75@1.85
Georges Creek Tyson	2.95@3.00	2.95@3.00	2.95@3.00	1.40@1.45
Clearfield:				
Medium	2.80@2.85	2.80@2.85	.....	1.25@1.35
Ordinary	2.75@2.80	2.75@2.80	.....	1.20@1.25
Broad Top Mountain				1.25@1.45
Cambria County:				
South Forks	3.05@3.10	.....	.....	1.50@1.60
Nanty Glo	2.90@3.00	.....	.....	1.35@1.45
Barnesboro	2.85@2.90	.....	.....	1.30@1.35
Somerset County:				
Quemahoning	.....	2.90@3.00	2.90@3.00	1.35@1.45
Medium	2.80@2.90	2.80@2.90	2.80@2.90	1.25@1.35
Latrobe	2.70@2.75	.....	.....	1.15@1.20
Greensburg	2.90@3.00	.....	.....	1.25@1.35
Westmoreland	3.20@3.30	.....	.....	1.45@1.55
West Virginia Fairmont ¾		2.70@2.80	2.70@2.80	90@1.10
Fairmont mine-run		2.70@2.75	2.70@2.75	.90@1.00
Steam		2.70@2.80	2.70@2.80	1.15@1.25
Western Maryland		2.70@2.80	2.70@2.80	1.15@1.25

PHILADELPHIA

Anthracite slowed up by the weather, but quickly recovered on return of seasonable conditions. Production large. Car supply short. Pea and stove lead the sizes and chestnut slow, but slightly firmer. Bituminous had fair week; slight price increases, especially Fairmont. Exports somewhat better but vessels scarce.

Anthracite—The week started in badly due to a return to summer weather which caused considerable holding up of orders by the retailers. However, retailers have had an opportunity to catch up with orders, many of them having been badly behind in this respect. The latter part of the week again turned cold so that the wholesale trade resumed its former briskness and the week can well be counted as a good one. All signs point to a busy market.

Low prices are the chief source of trouble to the dealers, rather than a lack of business. The cut-rate war rages and this week it extended to the north-west part of the city. Every dealer blames his neighbor and for the present an adjustment appears hopeless. The fight will probably continue until coal becomes scarce and in the meantime many of the householders appear to be taking advantage of the unusual prices and at the same time fortifying themselves against a probable suspension.

Broken is well taken care of while chestnut is still draggy but with quotations moderately firm. Egg shows little improvement and sales were recorded the past week at from thirty to forty cents off circular; one sale of 600 tons was made at $3.35, which is 40c. less than the circular. The individuals do not seem to be able to move it fast enough, even at cut rates, to avoid car demurrage at the mines. Stove and pea continue the leaders. The latter size is especially active and the dealers have moved more of it than any other size. Still the price does not advance, much to the chagrin of the individuals who appear to be most anxious to make up their

losses. There is certain to be an adjustment in the price of this size, though not at any time soon.

Buckwheat continues steady, and at times even scarce, while rice cannot find a market. Some of the larger companies are bringing large quantities of rice into the city and storing it at convenient points.

The prevailing prices f.o.b. cars at mines and at Port Richmond, per gross ton are as follows:

	Line	Tide		Line	Tide
Broken	$3.50	$4.75	Pea	$2.50	$3.25
Egg	3.75	5.00	Buckwheat	1.25	2.25
Stove	4.00	5.00	Rice	.85	1.75
Chestnut	4.15	5.25	Barley	.50	1.50

Bituminous—While many agencies report a good tonnage there are some who claim that shipments have been no better than the average, but even the offices of these concerns present a brisk appearance in their efforts to get the orders off the books. This is due to the difficulty in getting cars which is particularly felt in the Fairmont region where prices have been forced up. As a matter of fact the upward tendency in all grades continues to some extent. There has been a little more activity in the export trade; shippers continue to get frequent inquiries for foreign shipment, yet many feel it is a waste of energy to make quotations owing to the lack of vessel tonnage. At the present time most boats usually in the coal trade are carrying grain, oil and war munitions at very high rates.

The following are average prices prevailing, per gross ton:

Georges Creek Big Vein	$1.70@1.80	Fairmont gas, ¾	$1.30@1.45
South Fork Miller Vein	1.55@1.65	Fairmont gas, mine-run	1.15@1.25
Clearfield (ordinary)	1.20@1.30	Fairmont gas, slack	.85@ .90
Somerset (ordinary)	1.15@1.25	Fairmont lump, ordinary	1.10@1.20
West Va. Freeport	1.00@1.10	Fairmont mine-run	.95@1.05
		Fairmont slack	.85@ .90

BALTIMORE

Market grows steadily tighter under the restrictions of a poor labor supply and inadequate car movement. Export trade shows an improvement. Anthracite men busy.

Nearly everybody seems to want coal now that so little is available above that moved on contract obligations. Most of the producers and shippers are considerably behind on contracts.

In most of the mining districts of West Virginia, Pennsylvania and Maryland the past week the railroads were far behind in the car supply. Because of a number of recent vessels reporting here, both the Baltimore & Ohio and Western Maryland were giving some preferential treatment toward getting coal here to save ship demurrage. The result was an increase in the export movement over several weeks past. During the week just closed a total movement of 32,635 tons was recorded for foreign ports.

Anthracite dealers are quite busy. Supplies so far have been sufficient despite car shortage.

The following are prices quoted, although some coals are practically if not entirely out of the market:

	Mines	Balt.*		Mines	Balt.*
Geo. Crk. Big Vein	$1.80	$2.98	Ordinary mine run	$0.90	$2.28
Geo. Crk. Tyson	1.50	2.68	Ordinary ¾	1.00	2.43
Clearfield	1.30	2.48	Ordinary slack	.75@ .80	2.08
South Fork	1.45	2.63	Low sulphur mine-run	1.20	2.63
Latrobe	1.10	2.18	Low sulphur ¾	1.30	2.73
Somerset (best)	1.45	2.63	Low sulphur slack	.85	2.23
Somerset (good)	1.25	2.43			
Quemahoning	1.35	2.53			
Freeport	1.00	2.08			
Miller Vein	1.25	2.33			

* F. o. b., outside Capes.

HAMPTON ROADS

Movement for week somewhat light. Fair surplus at Tidewater.

Dumpings for the week continued light as compared with those of a few weeks back. The demand has been light on all grades both in the wholesale and retail market. The continued warm weather is having its effect on domestic dealers who are reporting but a small percentage of the usual sales for this time of the year.

Regular circular prices are still being quoted on coastwise and export coals while domestic grades are retailing at from $7.50 for anthracite to $5.50 for lump, egg and splints. There is a fair surplus of free coal at Tidewater and while shippers will not quote below the usual circular price an order for prompt movement could probably be filled at somewhat below circular.

Railroad Tonnages—Dumpings over the local piers for the past five weeks compare as follows:

Railroad	Week Ending Sept. 27	Oct. 2	Oct. 9	Oct. 16	Oct. 23
Norfolk & Western	163,400	131,055	140,934	145,236	163,920
Chesapeake & Ohio	91,341	72,996	93,344	66,361	81,517
Virginian	79,176	59,997	65,150	54,964	51,304
Totals	333,917	264,048	299,428	266,561	296,741

Ocean Charters, Clearances and Freights

VESSEL CLEARANCES

The following steamers have cleared from various ports during the week ended Oct. 22:

NORFOLK

Vessel	Destination	Tons
Campania[1]	Genoa	6,250
Fortunata[1]	Porto Ferrajo	3,700
Jupiter[1]	Genoa	6,826
Hesperos[2]	S. American Pt.	6,600
Socotra[2]	Rio de Janeiro	2,773
M. di Giorgio[3]	Kingston	1,400
Wimborne[4]	Gib. for Orders	8,720
Wegadesk[5]	Canal Zone	6,500
Brendon[1]	Dakar	6,000
Ulysses[5]	Canal Zone	12,000
Radcliffe[4]	Gib. for Orders	8,775
Maria C.[1]	Porto Ferrajo	4,380
Angiolina[6]	Italian Port	4,763
Berwindvale[7]	Havana	8,000

NEWPORT NEWS

Sinaloa[8]	Gardenas	2,500
Europa[8]	Havana	2,392
Fauna[8]	Puerto Cabello	1,565
Vesuvio[6]	Genoa	7,181
Modiva[8]	Puerto Mexico	1,656
Colusa	Tiburon, Cal.	3,369

BALTIMORE

Maxwell, Jr.	Guiana	849
Plymouth	Egypt	7,035
Tharros	Italy	4,325
Moedegaard	Cuba	4,127
Harflite	Italy	6,500
Grekland	Sweden	3,700
Claveresk	Cuba	6,100

PHILADELPHIA

Eagle Wing	Mayport	1,900
Logan[10]	Boston	
Temple[10]	Boston	
H. Clay[10]	Boston	
Tamanend[10]	Augusta	
Cleona[10]	Newburyport	
Buck Ridge[10]	Portsmouth	
Royal Sceptre	Rio de Janeiro	
Eagle Hill[10]	Marblehead	
Neshaminy[10]	Brookline	
Tohickon[10]	Milton	
Macungie[10]	Brewer	

PHILADELPHIA—Continued

Vessel	Destination	Tons
Tabor[10]	Bangor	
Monitor[10]	Portland	
Rosebank[11]	Valencia, Spain	
Geo. Pyman[11]	Barcelona, Spain	
A. B. Sherman	Charleston	510
Mingo[10]	East Cambridge	
Marion[10]	Charlestown	
Thomaston[10]	Milton	
Moselem[10]	Bangor	
Manatawny[10]	Augusta	
Cacoosing[10]	Thomaston	
Helvetia	Jacksonville	800
Beechwood[10]	Brookline	
Preston[10]	East Cambridge	
Bethayres[10]	Everett	
Elk Garden[10]	Providence	
H. A. Allyn[10]	Boston	
C. F. Pritchard[10]	Boston	
Shawmut	Mayport	
J. F. Seavey	St. John's, N. B.	

NEW YORK

Berwind	Santiago	27
Nederlanden	Carupano	126
M. N. Cobb	St. John	700
T. H. Lawrence	St. George	543
Southerndown	St. Nazaire	5,448
S P. Bowers	New Brunswick	959
Ed. Stewart	"Canada"	651
Caracas	Venezuela	10
Ancona	"Italy" (Coke)	265
Palmetta	Nova Scotia	174
Capac	Chile	450
Mexico	Mexico	25
Calamores	Panama	9
Glance	Norway (Coke)	977

[1] Pocahontas Fuel Co. [2] Smokeless Fuel Co. [3] Hasler Bros. [4] Flat Top Fuel Co. [5] W. C. Atwater Co. [6] New River Coal Co. [7] Baker Whiteley [8] Berwind White. [9] Md. Coal & Coke Co. [10] Phila. & Reading C. & I. Co. [11] Berwind White C. M. Co.

OCEAN CHARTERS

The following charters have been reported from various sources during the past week:

PHILADELPHIA

Vessel	To	Tons	Rate
Helvetia	Jacksonville	424	1.10
C. A. Donnell	Mayport	990	1.00
E. M. Willey	Mayport	735	
J. F. Seavey	St. John	336	
Harflete	Italy	3,021	
J. M. Haynes	Cay Francis	683	3.00
R. P. Murphy	Martinique	572	3.90
Annie	Casilda	1,000	4.00

BALTIMORE

Atland	Swedish[1]	2,744	
Moldegaard	Havana	1,788	
Poviga	Italy	2,057	

BALTIMORE—Continued

Vessel	To	Tons	Rate
C. A. Campbell	Mayport	1,493	
Jean	Mayport		
New Sweden	Sweden		
Grekland	Sweden	1,671	

[1] Port

VIRGINIA

C. E. Look	San Domingo		457
Fauna	Trinidad	728	

ATLANTIC RANGE

G. E. Dudley	Macoris	387	

OCEAN FREIGHTS

The freight market is much firmer than a week ago, and is still advancing; new high levels are being reached on time charters in grain and other trades. Tonnage is very scarce and steamers difficult to obtain; none of the few steamers that have been chartered for export coal, since our report was issued, have been reported.

We would quote freight rates on coal by steamer as follows:

To	Rate	To	Rate
Havana	$2 50@2 75	Bermuda	$3 00@ 3.25
Cardenas or Sagua	2.75@3.25	Vera Cruz	4 75@ 5.00
Cienfuegos	3.00@3.50	Tampico	4 75@ 5.00
Port au Spain, Trinidad	3.75@4.00	Rio	9.60@10.32
St. Lucia	3.75@4.00	Santos	9.84@10.56
St. Thomas	3.25@3.50	Montevideo	9.60@10.80
Barbados	3.75@4.00	Buenos Aires or La Plata	9.60@10.80
Kingston	3 00@3.25	Rosario	10.80@12.00
Curacao	3.50	West Coast of Italy	15.60@16.80
Santiago	3 25@3.50	Barcelona	13.20@15.60
Guantanamo	3 25@3.50	Valparaiso or Callao	7.50
Demerara	5.50@6.00	Marseilles	14.40@15.60

* Consignees paying dockage dues. ** Spanish dues for account. † Quotations on Plate coal by British steamers; neutral steamers are more difficult to obtain and the rates are always higher.

W. W. Battie & Co.'s Coal Trade Freight Report.

LAKE MARKETS

PITTSBURGH

Labor supply growing scant. Car shortages exercise important influence. Considerable export movement. Prompt prices about 5c. higher.

Labor supply has become still more a factor in coal trade. Not much difficulty has been experienced as yet in the Pittsburgh coal district, but the Connellsville region is distinctly short of men and it is claimed more ovens could be put in blast, with a market for their product, if men could be gathered. Some of the Pittsburgh district mines are a trifle short of men. At present car shortages are more important than labor shortages. At many of the mines operations are being governed wholly by the car supply and while fair outputs are obtained on an average the operation is quite irregular; operations average 70 to 75% of capacity.

The demand for coal for export both to Canada and through the Seaboard is increasing. Considerable mystery has attached to the coal export movement for months and a larger tonnage is doubtless going out than is generally reported. Indeed it appears that in some instances the business has been so handled that the coal operators themselves do not know that their coal is going into export channels. The market has undoubtedly stiffened in the past week or ten days and with no great change in the demand for local use the stiffening may perhaps rightly be attributed to export demand.

There is a little larger movement to retail dealers while the railroads are taking somewhat more coal. The iron and steel industry had already reached its maximum possible consumption, though there may be some stocking in the next few weeks. We quote free coal generally about 5c. higher, with Youghiogheny gas slack strong at 75c. and steam slack at a spread below, prices being in general as follows: Free coal: Slack, 60@75c.; nut and slack, $1@1.05; nut, $1.05@1.10; mine-run, $1.10@1.15; ¾-in., $1.20@1.25; 1¼-in., $1.25@1.30; on contract to Apr. 1. Slack, 85@95c.; mine-run, $1.15; ¾-in., $1.25; 1¼-in., $1.35, per net ton at mine, Pittsburgh district.

BUFFALO

Market strong but not booming. Prospect of greater activity later. Many reports of car shortage. Some roads short of low-sided cars for the first time.

Bituminous—The former steady improvement continues. However, close observers say that home business is not yet up to the normal and except for the business that hinges on the war, the general volume would not be large. It is the export trade and the war orders that keep up our activity.

Still the condition of the railroads shows that an enormous volume of business is being done. Certain Pennsylvania roads are short of gondola cars for the first time in their history. The grain trade is taxing all roads in this vicinity to provide adequate motive power and that reduces their capacity for moving coal. There is not much complaint of coal on track unsold, but the mines would flood all markets if they could get the cars. It is impossible to get sufficient cars for more than a fair increase of output.

Bituminous prices grow stronger each week, though it is noted that certain Pennsylvania companies, are accused of putting out fictitious prices to stave off orders. Following are representative figures:

	Pittsburgh	Allegheny Valley	Penn. Smokeless
Lump	$2.65	$2.45	$2.55
Three-quarter	2.55	2.35	....
Mine-run	2.45	2.25	2.30
Slack	2.25	2.15	2.30

Prices are f.o.b. per short ton to Buffalo and Rochester points and per long ton east of Rochester.

Anthracite—The trade increases steadily, but has hardly reached the normal mid-autumn volume, on account of the mild weather. The demand will come with a rush after awhile, but there is a growing idea that it is not going to be enough to offset the dullness that prevailed all summer. It is noted that a great many families are doubling up for the winter to save fuel, especially in Canada, where business in much duller than it is here. Shippers of independent anthracite report some premiums received, but this is only in special cases. Prices are about on a par with the circular, as follows, per long ton, f.o.b. Buffalo: $5.60 for grate, $5.85 for egg and stove, $6.10 for chestnut, $4.30 for pea, $3.25 for buckwheat, $2.75 for rice, $2.50 for barley, and $2.25 for screenings, with 25c. extra for delivering on Lake vessel. Lake shipments for the week were 104,000 tons.

TORONTO, CAN.

Anthracite fair. Bituminous slow except on slack which is strong. Car supply short.

Anthracite for domestic purposes is in fair demand, but bituminous is not moving so freely. The principal feature of the market is the scarcity of slack, owing to the shortage of cars, which is holding back deliveries. The wholesale price of slack has advanced and is likely to go higher unless transportation conditions improve. There are abundant supplies of other grades in stock, as dealers are anxious to provide against a shortage. Quotations per short ton, for best grades, are as follows: Retail anthracite, egg, stove and nut, $7.75; grate, $7.50; pea, $6.50. Bituminous retail steam, $5.25; screenings, $4.25 to $4.50; domestic lump, $6; cannel, $8. Wholesale f.o.b. cars at destination, three-quarter lump, $3.79; screenings, $3.15.

COLUMBUS

Continued improvement in the Ohio trade. Steam trade is stronger and domestic demand holding up well despite the warmer weather. Prices strong all along the line.

Strength is still the chief characteristic of the coal trade in Ohio. With the continued expansion in manufacturing, there is a stronger demand for steam grades and despite the warmer weather there is also a steady call for domestic sizes. Strength is shown in the price list on all grades.

Iron and steel manufacturing is decidedly on the upturn and this is reflected on the coal trade to a marked degree. Manufacturing in other lines is also better and fuel requisitions are gradually increasing. Purchasing agents are showing a disposition to buy for the future and orders for shipment in November and December are noted. Railroads have about concluded stocking operations, although there is still a good demand for railroad fuel in certain sections. Contracting for steam tonnage is rather active.

Retail trade has been good in spite of the unfavorable weather conditions. Dealers have been busy making deliveries and householders are now in the market for considerable stocks. Retail prices are strong and there are indications of an advance some time after Nov. 1. Dealers stocks are light. Coke is stronger and the same is true of anthracite.

The Lake trade is still active and there are indications of a rush from this time to the close of navigation. Bottoms have been chartered until insurance is off and very few empties are available. Dock prices are unchanged.

One of the worst features is the growing car shortage which is interfering with shipments.

Prices in Ohio fields per short ton, f.o.b. mines, are as follows:

	Hocking	Pomeroy	Eastern Ohio	Kanawha
Re-screened lump	$1.60	$1.65		
Inch and a quarter	1.50	1.50	$1.35	$1.50
Three-quarter inch	1.35	1.40		1.35
Nut	1.25	1.30		1.25
Mine-run	1.15	1.20	1.05	1.10
Nut, pea and slack	.70	.75	.55	.60
Coarse slack	.60	.65	.45	.50

Mines have been working at about the following percentages of full capacity:

District	Week Ended Oct. 2	Oct. 9	Oct. 16	Oct. 23	District	Week Ended Oct. 2	Oct. 9	Oct. 16	Oct. 23
Hocking	50	50	55	60	Cambridge	45	50	60	60
Jackson	25	30	40	60	Massillon	45	55	60	45
Pomeroy	80	75	85	65	Eastern O.	80	80	85	85
Crooksville	40	45	50	85					
					Average	52	55	62	65

CLEVELAND

Warm weather has cut deeply into the immediate demand. Market rather soft at the opening of the week. Receipts light.

Domestic coal was at a low point Monday when Pocahontas lump and egg were sold on track here at $3.50 and mine-run at $2.75. These prices were due entirely to a warm day that prevented dealers selling domestic coal. Prices being asked by Fairmont operators are prohibitive so far as the local market is concerned and one or two jobbers who sold short are having considerable trouble covering at a price that will let them out.

Between 250 and 300 cars were received over Sunday, but the warm weather reduced the demand for coal as heating plants were not fired or, if they were, they were using the minimum amount of fuel. There was no sign of price cutting except on domestic fuel, the steam grades being a safe proposition to hold for a few days.

The Lake trade shows very little change. The car shortage is preventing much increase in shipping and orders from the Northwest are not pressing.

Jobbers are being quoted at the following prices f.o.b. Cleveland per short ton:

	Pocahontas	Youghiogheny	Fairmont	Bergholz	Ohio No. 8
Freight rate	$1.45	$1.00	$1.15	$0.70	$0.90
Lump	3.60				
Lump, 6-in				2.30	
Lump, 1¼-in		2.40		2.10	2.15
Lump, ¾-in		2.30	2.15	2.00	1.95
Egg	3.60				
Egg, 6-in				1.90	
Mine run	2.75	2.15	2.05	1.85@1.90	1.85
Slack		1.80@1.85	2.00	1.65	1.65@1.70

DETROIT

Steam coal buying is steady. Demand for domestic sizes weak. Anthracite active. Lake movement still below normal.

Bituminous—Growth of business in various manufacturing lines is creating a broader market for steam coal. Orders continue mostly for small tonnage, but the business is expanding into a steady demand and regular buying, with fine coal especially active. Domestic demand has not been up to expectations, due to continued high temperatures.

Prices are in most instances maintained at close to the circular. For Hocking domestic lump, the mine price per short ton is about $1.50, with three-quarter lump at $1.25 and the mine-run at about $1. Jackson Hill domestic lump is $2.50; West Virginia gas three-quarter lump, $1; mine-run, 90c.; slack, 75c.; splint three-quarter lump, $1.10; slack, 60c.; mine-run, 85c.; Kentucky splint lump, $1.65; Pittsburgh No. 8 three-quarter lump, $1.10; smokeless lump and egg, $2.25; nut, $1.75, and mine-run, $1.40.

Very little difficulty is now reported from consignment stock, though sales of lump and egg sizes are made occasionally below list to clear tracks.

Anthracite—Retail dealers are having a satisfactory business. Stocks, however, are holding out well and they are still cautious in giving renewal orders. Delivery is being delayed by car shortage in the mining regions.

Lake Trade—Bituminous shipments are not up to those of previous seasons and are being handled very largely by vessels carrying iron ore down. The movement of hard coal is about normal. Reports from the Canadian and American head of the lakes denote larger shipments are being made from unloading docks to consuming points.

TOLEDO

Lake coal moving as navigation season draws near, close. Steam trade improved.

The market continues rather colorless. There has been quite a movement of Lake coal and the docks are fairly well loaded as the navigation season draws nearer to a close. Steam trade here is improved, due partially to the heavier operation of many factories and also to the improved situation on the railroads. Nut, pea and slack are in unusually good demand. Domestic coal is not as active as might be expected owing to the recent mild weather. Prices are unchanged as follows:

	Pocahontas	West Virginia	Hocking	Pomeroy	Jackson	Massillon	Kentucky	Pittsburgh No. 8
Lump	$2.25	$1.40@1.85	$1.60	$1.65	$2.50	$2.50	$1.75	$1.25
Egg	2.25	1.00@1.25	....	....	....	....	1.25	1.20
Mine-run	1.40	.85@1.00	1.10	1.10	2.50	....	.90@1.10	1.00
Nut	....	.90@1.15	1.25	1.25	....	2.50	.90@1.15	....
Nut, pea and slack	....	.....	.65	.65	.60	....	.40@ .60	.60@.75

CINCINNATI

Labor and car shortage and improving demand the dominate features. Prices stiffening. Orders difficult to handle.

Continuance of constructive factors has stimulated the market materially and there is a rather noticeable shortage even with the comparatively small demand. While the weather has not yet been severe, there has been plenty of frost at night, which has served to bring consumers into the market for heating fuel. The continued improvement in the industrial situation, led by the steel and machinery trades, is expected to develop a normal demand for steam coal all through the winter, and all that the trade now needs is a sufficient supply of rolling stock and labor.

COKE

CONNELLSVILLE

Sharp advance in prompt furnace coke continues. Efforts to start additional ovens encounter labor scarcity. Foundry coke likewise higher. Production and shipments slightly increased.

The scarcity of spot furnace coke has become more pronounced and higher and higher prices have been bid, reports having it that $2.75 has already been paid in several instances, though bids at this writing are usually about $2.60. There has been an advance of nearly 50c. in a week and of fully 75c. in two weeks. Operators have been making strenuous efforts to get additional ovens into blast since this sharply advancing movement started, but have met with indifferent success, on account of the shortage of men. The Republic Iron & Steel Co., which was buying for a while at the rate of perhaps 2,000 tons a day, is said to require outside coke still as its additional 75 byproduct ovens are only being put in blast this week and it may be some time before their full output is realized, while the company's beehive plant in the Connellsville region was recently closed, to ship coal to the new plant.

Negotiations on furnace coke contracts are somewhat disturbed by the advance in prompt coke as operators are disposed to hold out now for higher prices. Foundry coke has stiffened sharply, for with fairly remunerative prices offered for furnace coke there is a disposition on the part of some operators to give less attention to the foundry coke trade. As high as $2.85 has been paid on carload lots of spot foundry in the case of the best brands. When contracts were made last May and June the operators were disposed to restrict the period to six months instead of the usual twelvemonth, and it is expected considerable contract demand will now develop for the first six months of next year. We quote: Spot furnace, $2.60@2.75; contract furnace, $2.25@2.50; spot foundry, $2.60@2.85; contract foundry, $2.60@2.85, per net ton at ovens.

The "Courier" reports production in the Connellsville and lower Connellsville region in the week ended Oct. 16 at 421,091 tons, an increase of 3,367 tons, and shipments at 422,645 tons, an increase of 4,567 tons.

Buffalo—The prices on all grades of coke are strong. It is found so hard to obtain all the cars required that the actual demand cannot be supplied at all readily. The consumption increases steadily and promises to continue so for sometime yet. Most producers have withdrawn all quotations, but local jobbers still quote best 72-hr. Connellsville foundry at $4.40 and stock coke at $3.45.

New York—Prices for coke took a jump during the week and quotations for foundry coke were at $3 subject to quick acceptance.

Chicago—Furnace and foundry coke are still in a strong position. Orders for foundry coke have shown further gains. Domestic sizes are easier due to weather influences. Prices per net ton f.o.b. cars Chicago are as follows: Byproduct foundry, $5@5.25; byproduct domestic, $4.65@4.90; Connellsville, $4.85@5; Wise County, $4.85@5; gas coke, $3.90@4.15.

MIDDLE WESTERN

GENERAL REVIEW

Car shortages prevalent. Warm weather causes slackening in domestic orders. All bituminous prices firm. Anthracite active. Mines still behind orders. Screenings stronger.

Notwithstanding the continuance of warmer weather, which has prevented domestic coals from developing as rapidly as expected, remarkable strength is noted in the trade and the demand is well distributed on all grades. An increasing slowness in the movement, due apparently to car shortages, is causing many retailers considerable anxiety. Most country retailers are reported to be taking but little stock in the possibility of a miners' strike next spring.

It is difficult to buy any large quantities of the coarser sizes without paying full circular prices. No consignment coal is on the market. Current domestic shipments from the mines are all being made within the limits of price schedules, and what slight concessions are made apply only to shipments for the Chicago district. Some of the western railroads are finding difficulty in providing enough cars to load their contract orders.

Buying of steam coals is confined mostly in small quantities, though orders are so frequently renewed that the aggregate tonnage is considerably more than at any time since last winter. Western screenings have advanced 5c. to 10c. per ton and operators are receiving two to three times as much revenue for fine coal as they did at this time last year. Some Illinois operators are considering storing screenings on the ground if the demand continues below production.

CHICAGO

Mild weather causes a slowing up, but the market has not lost ground. No Eastern coals offered and some shippers behind on their contracts. Car and labor supply short. Anthracite active.

Shipments of all grades from Franklin County are keeping up at a steady rate. A slight recession has occurred in the domestic ordering due to warmer weather, but screen-

ings and other steam coals are strong. Some heavy sales of Southern Illinois screenings for storage purposes have been made. Saline County screenings are exceptionally strong. Carterville mines have had poor car supply, some of the mines being closed down for one or two days.

Springfield district coals show little change. Screenings are averaging from 40c. to 50c. per ton, and domestic sizes have been well maintained in the face of the higher temperatures.

The Indiana domestic demand has slowed up somewhat. With the advent of cold weather again the retail trade will probably be in full swing, so that a great many dealers are piling up stocks. Buying of Indiana steam coals continues on a hand to mouth basis, and very few manufacturers have laid in a supply for winter use.

The small sizes of Hocking coal are eagerly sought Steam business is quite brisk, and the Lake trade is reported still active and is expected to continue so until the close of navigation.

Kentucky prices are firm. The car supply has become quite a problem and some of the mines have only been able to operate half time; a number of mines are behind on their contracts from a week to ten days, and the car and labor situation shows no prospect of improvement. It is confidently expected therefore that much higher prices will prevail for Kentucky production very shortly.

Anthracite demand is brisk, with a satisfactory increase in both mail and wire orders. Dealers report delayed movement and orders from far Western points are arriving in increasing numbers. Improvement in distribution is quite pronounced.

Quotations in the Chicago market are as follows:

	Williamson and Franklin Co.	Springfield	Sullivan	Clinton	Knox and Greene Cos.
Lump	$1.75@1.85	$1.50@1.65	$1.50@1.70	$1.35@1.50	$1.40@1.60
Steam lump	....	1.20@1.30	1.15@1.30	1.25@1.30	....
2½ and 3-in. lump	....	....	1.40@1.50	1.15@1.25	1.30@1.45
1½-in. lump	....	....	1.25@1.30	1.10@1.20	....
Egg	1.75@1.85	1.50@1.65	1.15@1.25	1.10@1.15	1.15@1.25
Nut	1.10@1.25	1.60@1.65	1.00@1.10	.95@1.10	1.00@1.05
No.1washed	....	....	1.50@1.60	....	....
No.2washed	....	....	1.40	....	....
No. 1 nut	1.75@1.85	....	....	....	....
No. 2 nut	1.40@1.50	....	....	....	....
Mine-run	1.10@1.25	1.05@1.10	.85@.95	.95@1.05	.85@1.05
Screenings	.60@.85	.40@.50	.45@.55	.55@.65	.75@.80

	Harrisburg & Saline Co.	E. Kentucky	Pocah. & W.Va.Smok'l.	Penna. Smokeless	Hocking
Lump	$1.65@1.75	$1.60@2.10	$2.25	$1.75@2.00	$1.60@1.75
1¼-in. lump	1.25@1.30	....	....	1.35@1.50	1.40@1.50
Egg	1.65@1.75	1.35@1.75	2.15@2.25	1.65@1.85	
Nut	1.25	1.25@1.35	....	....	1.30
No.1washed	1.75@1.85	....	....	....	....
No.2washed	1.40@1.50	....	....	....	....
Mine-run	1.00@1.15	....	1.40	1.25@1.40	1.10@1.15
Screenings	.60@.70	.60@.70	....	....	.65@.75

Splint, 3-in. lump, $1.35@1.60; 1¼-in. lump, $1.25@1.35.

DULUTH

Gradual and steady increase in shipments of commercial coal. Receipts light.

Shipments of the past week are fully up to the average, although the mild weather has curtailed retail business to a certain extent. Shipments for September amounted to 24,712 cars as compared with 24,347 cars for the same month last year, an increase of 365 cars over 1914 and 678 cars for the same month in 1913. These figures would indicate a gradual and steady improvement and the various managers of the dock companies are optimistic as to the future.

Receipts continue light, the vessel owners and managers find it more profitable to ship grain at the present rates, than to carry coal. Quotations per short ton, f.o.b. cars Duluth are as follows:

	Yough.	Splint	Hock.	Smokeless	Elkhorn
Lump	$3.40	$3.40	$3.40	$4.75	$3.75
Dock-run	3.10	3.10	3.05	3.25	3.25
Stove or nut	3.40	3.40	3.40	4.75	3.65
Screenings	2.40	2.40	2.25	2.75	2.40

The mild weather throughout this territory during the last ten days has caused quite a shrinkage in the shipments of anthracite, the retailers finding it impossible to induce their customers to stock up. However, it only remains for a few days of cold weather to start a regular buying boom in this commodity. Quotations f.o.b. cars per short ton, are as follows: Egg and stove, $6.85; nut, $7.10; pea, $5.55, and buckwheat, $4.

ST. LOUIS

Mild weather slows down the market. Screenings in good demand. Over-production of Standard grades.

The persistent fair and fine weather has caused a continuance of stagnant market conditions. There was only a light movement and that was mostly in the left-over output of the week before, when there was a touch of winter. Price changes were slight. The week closed with Williamson and Franklin County screenings short and tightening up and Standard and Staunton heavy on account of recent over-production.

Quotations f.o.b. mines during the past week have ranged on following basis per short ton:

	Frk. Co.	Wmsn. Co.	Staunton	Standard
6-in. lump	$1.50@1.75	$1.50@1.75	$1.25@1.35	$1.20@1.25
2-in. lump	.....	.....	1.15@1.20	1.10
3x6 egg	1.40@1.75	1.40@1.65	.....	1.00
2x6 egg	.....	.....	.....	.80@.85
No. 1 nut	1.50@1.75	1.50@1.75	.....	.80
No. 2 nut	1.40@1.50	1.40@1.50	.....	.55
No. 1 washed	.....	1.65	1.50	.....
No. 2 washed	.....	1.25	1.10@1.25	.....
No. 3 washed	.....	1.25	1.10@1.25	.....
No. 4 washed	.....	1.20	1.05	.....
No. 5 washed	.....	.60@.70	.50@.60	.....
Screenings	.40@.50	.40@.50	.20@.25	.20@.25

Freight rates—Inner group, St. Louis 57½c., East St. Louis 37½c. Outer group, St. Louis 72½c., East St. Louis 52½c.

INDIANAPOLIS.

Indiana mines on about normal schedule. Railroads good buyers and industrial situation improved. Prices generally unchanged. Minimum quotation for screenings 55c. f.o.b. mines.

The weather has been too warm for a further improvement in the better conditions that have been prevailing recently, but the market has held its own. While the mines are not up to their maximum winter schedules, they are probably within 25% of it in the chief fields. The larger companies report that their surplus coal is well cleaned up notwithstanding the slackening in demand due to the higher temperatures.

Fair prices for slack are still obtainable, 55c. seeming to be the bottom for Nos. 5 and 6. The demand for No. 4 from gas producing plants and other users of high quality screenings is such as to maintain the price at 80c. Railroads continue to be good buyers and coal operators believe this is an indication that roads see better times ahead. They are still able to supply cars enough to meet current requirements, but there is considerable talk about a car shortage generally.

PRODUCTION AND TRANSPORTATION STATISTICS

PENNSYLVANIA RAILROAD

The following is a statement of shipments over the P. R.R. Co.'s lines east of Pittsburgh and Erie for September of the current year and the nine months of 1914 and 1915, in short tons:

	September		Nine Months	
	1915	1914	1915	1914
Anthracite	783,307	983,442	7,603,051	8,020,105
Bituminous	3,901,402	4,050,102	31,678,900	32,864,642
Coke	1,152,668	733,479	8,378,576	7,561,858
Total	5,837,377	5,767,023	47,660,527	49,446,605

FOREIGN MARKETS

GREAT BRITAIN

Oct. 15—There is no improvement in the general position of steam coals, which are weak for all descriptions, owing to the lack of ready steamers. Quotations are nominally as follows:

Best Welsh steam	Nominal	Best Monmouthshires	$5.76
Best seconds	Nominal	Seconds	4.32
Seconds	$5.76	Best Cardiff smalls	4.08
Best dry coals	6.96	Cargo smalls	1.92

The prices for Cardiff coals are f.o.b. Cardiff, Penarth or Barry, while those for Monmouthshire descriptions are f.o.b. Newport, both net, exclusive of wharfage.

Freights—Chartering is on restricted lines especially for the Mediterranean. Tonnage is still scarce and rates are strongly maintained. Rates are approximately as follows:

Gibraltar	$6.72	Naples	$9.60	St. Vincent	$9.12
Marseilles	8.68	Alexandria	10.80	River Plate	11.44
Algiers	8.10	Port Said	10.80		
Genoa	9.60	Las Palmas	7.92		

Coal Contracts Pending

The purpose of this department is to diffuse accurate information of prospective purchases and prices with a view to affording equal opportunity to all, promoting market stability and inculcating sound business principles in the coal trade.

✚Indicates contracts regarding which official information has been received.

Recast

In the following table we give a list of all old contracts coming up for consideration during the ensuing week. The table gives our contract number, the name of the purchaser, city, tonnage and page on which the detail notice appeared.

No.	Purchaser	City	State	Tonnage	Page
1485	Rock Falls Elec. Lt. Plant	Rock Falls	Ill.	1,800b	576
1487	Carnahan Tin Plate Co.	Canton	Ohio	24,000b	576
1498	Fall City Brewery	Louisville	Ky.	3 cars[1]	577
1566	Cuyahoga Bd. Comrs.	Cleveland	Ohio	30a	699
1566	Cuyahoga Bd. Comrs.	Cleveland	Ohio	3,000b	699
1567	Adams County B. Com.	Hettinger	N. D.		699
1575	S. Hosp. Injured Persons	Fountain Springs	Penn.		700
1582	County Controller	Erie	Penn.		700
1585	Board of Education	Montclair	N. J.	660a	700

a Indicates anthracite coal. b Indicates bituminous. [1] Or four.

Supplemental Notes

Under this heading additional or supplemental information regarding old contracts appears, together with the page number of the original notice.

No. 990—Kansas City, Mo.—The previous notice regarding this contract (p. 76) erroneously referred to it as for the General Hospital instead of the German Hospital, as it should have been. Address Board of Directors, German Hospital, Kansas City, Mo.

✚1262—Des Moines, Iowa—This contract (pp. 324, 489, 660), which provides for furnishing the local School Board with approximately 8,000 tons of steam coal, was bid on as follows: Through 1¾-in. screenings, $2; mine-run, $3; lump, $3.25; range, $2.75. Steam coal is used mostly on this contract, the former price ranging from $1.60 to $1.80. Address Secy. A. L. Clinite, Bd. of Edu., Des Moines, Iowa.

1501—New Orleans, La.—The Crescent Bed Co. has decided to confine its purchases to the open market, instead of contracting, as previously noted (p. 577). Address Pur. Agt. Peter Jung, Jr., Crescent Bed Co., Inc., Gravier and Broad St., New Orleans, La.

✚1549—Trenton, N. J.—All the bids have been rejected on this contract (pp. 617, 699), which provides for furnishing approximately 3,500 tons of bituminous coal to the city pumping station and municpal building. It is understood that the city will readvertise for additional bids. Address City Chemist A. Parobek, City Hall, Trenton, N. J.

New Business

1588—Quechee, Vt.—The A. G. Dewey Co. at this place usually contracts about Nov. 1 for its annual requirements of coal involving approximately 12,000 tons of bituminous, 30 tons of anthracite stove and 30 tons of nut. This company has a storage capacity of 400 tons and deliveries are made by railroad. Address Pres. John J. Dewey, A. G. Dewey Co., Quechee, Vt.

1589—St. Louis, Mo.—The Liggett & Myers Tobacco Co. will receive bids until Nov. 1, for furnishing their annual fuel requirements for the fiscal year beginning Nov. 15. About 2,000 tons per month of No. 5 washed or 2-in. raw screenings will be required. Address Vice-Pres. R. D. Lewis, Liggett & Myers Co., St. Louis, Mo.

✚1590—Trenton, N. J.—A city commission will receive bids until 2:30 p.m., Nov. 10, for furnishing coal to the Department of Parks and Public Property as follows: For the Pumping Station, 7,000 tons of bituminous to be delivered as required; for the Municipal Building, 50 tons of bituminous to be delivered on the first of November, January and March, and 100 tons to be delivered on Feb. 1. Complete specifications and blank contracts may be obtained on application to the Director of Parks and of Public Property on and after Oct. 6. All proposals must be accompanied by a certified check for $500. Address City Clk. Frank Thompson, Municipal Building, Trenton, N. J.

✚1591—New Rockford, N. D.—The City Government will receive bids until 3 p.m. Nov. 1, for furnishing carload lots of lignite coal as may be required during the coming season. Address County Audr. James MacLachlen, New Rockford, N. D.

1592—Cincinnati, Ohio—The Cincinnati, Milford & Loveland Traction Co. usually contracts for their annual fuel requirements, involving approximately 5,000 tons of demurrage coal, some time during the fall. The company has a storage capacity of 600 tons, and deliveries are made by railroad at the rate of 100 tons per week. Address Pur. Agt. A. C. Wenzel, Cincinnati, Milford & Loveland Traction Co., 510 Sycamore St., Cincinnati, Ohio.

1593—Chicago, Ill.—The A. H. Andrews Co. will contract about Dec. 1 for 6,000 tons No. 3 raw and No. 4 washed Illinois or Indiana nut coal. Address Pur. Agt. Merrill, A. H. Andrews Co., Chicago, Ill.

✚1594—Arvilla, N. D.—The County Government will receive bids until 10 a.m. Nov. 23, for furnishing the County Hospital with approximately 100 tons of Hocking Valley lump coal. Bids should be made f.o.b. siding at Arvilla. Address County Audr. Hans Anderson, Grand Forks, N. D.

✚1595—Hollidaysburg, Penn.—The County Government received bids until noon Oct. 27, for furnishing and delivering approximately 700 tons of bituminous coal at the heating plant in the jail yard at Hollidaysburg, and approximately 80 tons to the Industrial Training Home at Williamsburg. The successful bidder will be required to furnish a bond for $300 guaranteeing the faithful performance of the contract. Deliveries are to extend over the period ending Dec. 31, 1916. Address County Controller T. W. Tobias, Hollidaysburg, Penn.

✚1596—Kenmare, N. D.—The City Auditor at this place will receive bids until 8 p.m. Nov. 1, for furnishing coal for the various city departments as may be required during the ensuing year. Each bid must be accompanied by a bond for $200. Address City Audr. Evan Griffith, Kenmare, N. D.

✚1597—Steubenville, Ohio—The Board of Education at this place will receive bids until noon Oct. 30 for furnishing coal as may be required at the public schools during the year beginning Nov. 1. Address Clk. W. S. McCauslen, Bd. of Edu., Steubenville, Ohio.

✚1598—New Orleans, La.—The Public Belt Railroad Commission is receiving bids for furnishing their annual fuel requirements. A proposal form and specification for purchasing 10,000 tons, was drawn up on Oct. 22. The specifications provide for furnishing mine-run coal f.o.b. New Orleans. Address Secy. F. H. Joubert, Pub. Belt Railroad Com., 7th Floor, Municipal Bldg., New Orleans, La.

✚1599—Devils Lake, N. D.—The Ramsey County Board of Commissioners will receive bids until 2 p.m. Nov. 2, for furnishing approximately 100 tons of Hocking Valley, Youghiogheny or Pocahontas mine-run or anthracite, egg or stove coal, or 200 tons of lignite coal to be delivered in the bins at the Court House. Address County Audr. J. A. Kramer, Bd. of County Comrs., Devils Lake, N. D.

✚1600—Warrensburg, N. Y.—The Board of Education at this place received bids until 3 p.m. Oct. 2, for furnishing the coal required by School District No. 1 during the coming school year. Prospective bidders were required to specify the grade and quality, together with the price per ton delivered in the school building. Address Board of Education, Union Free School District No. 1, Warrensburg, N. Y.

✚1601—Cameron, Mo.—The City Government at this place usually contracts for the coal required at the Municipal Light and Water Plant, about Dec. 1. Approximately 3,000 tons of nut and pea, through a 1½-in. and over ½-in. screen is required. Business is done on a competitive basis and the customary price is about $1.10 per ton, f.o.b. Cameron. Address Clk. Clarence Staples, Cameron, Mo.

✚1602—Hootinger, N. D.—The Board of Education at this place received bids until Oct. 28 for furnishing approximately 50 tons of North Dakota screened lignite coal. Address Clk. Alex. Stensby, Bd. of Edu., Hootinger, N. D.

✚**1603—Krumroy Station, Ohio**—The Board of Trustees of the Springfield Lake Sanitorium will receive bids until noon Nov. 20, for furnishing approximately 15,000 tons of 1½-in. nut, mine-run and ¾-in. screened coal. Bids will be received only on Ohio, West Virginia, Pittsburgh and Youghiogheny coal. The contract is to become effective Dec. 1. Bids will also be received for delivering the coal at the Sanitorium. Address Secy. F. L. Allen, Bd. of Trustees, Springfield Lake Sanitorium, Canton, Ohio.

1604—Chicago, Ill.—The American Malting Co. will be in the market about Dec. 1 for a year's supply of Indiana 1¼-in. screenings. This company consumes 60 tons per day. Address Purchasing Agent, American Malting Co., Chicago, Ill.

✚**1605—Frankfort, Ky.**—Sealed bids will be received until noon, Nov. 18, for furnishing the State Capitol power house with nut and slack coal, and other buildings with lump coal. Bids are requested on Pittsburgh, Kanawha, Kentucky, Raymond City, Plymouth and Old Lee anthracite, stove and nut sizes. Bids will be considered on a heat-unit basis. Address Custodian Samuel M. Lykins, Capitol, Frankfort, Ky.

✚**1606—Napoleon, N. D.**—The Logan County Board of Commissioners will receive bids for furnishing and delivering lignite coal to the local court house. All bids must be accompanied by certified checks for $50. Address Audr. M. W. Kelly, Napoleon, N. D.

✚**1607—Secaucus, N. J.**—The Board of Education received bids until Oct. 26 for furnishing and delivering approximately 50 tons of pea coal and 50 tons of stove coal. Address Dist. Clk. John Bremmer, Bd. of Edu., Secaucus, N. J.

✚**1608—Sedalia, Mo.**—The City Government will receive bids until 5 p.m. Nov. 1 for furnishing the city with coal during the period beginning Nov. 2 and ending June 1 of next year. Address City Clk. W. E. Gold, Sedalia, Mo.

1609—Kokomo, Ind.—The Indiana Railway and Light Co. usually contracts for their annual fuel requirements involving approximately 32,500 tons of Indiana screenings, some time during the fall. Deliveries are made by railroad at the rate of about 100 tons per day, and the company has storage capacity of 2,000 tons. Address Pur. Agt. R. M. Blackmore, Indiana Railway and Light Co., East Sycamore St., Kokomo, Ind.

✚**1610—Gascoyne, N. D.**—Sealed bids are being received for furnishing Fischbein School District with coal as may be required during the coming winter. Address Clk. Gus E. Deutscher, Fischbein School District, Gascoyne, N. D.

Contracts Awarded

Note—Successful bidders are noted in **bold face** type.

1184—Roaring Spring, Penn.—This contract (p. 244), which provides for furnishing and delivering approximately 100 tons of steam mine-run coal, has been awarded to the **Planing Mill Co.** at $2.05 per short ton. J. E. Gilliland bid $2.06 per ton. Address Secy. F. K. Lorenz, Roaring Spring Sch. Bd., Roaring Spring, Penn.

1431—Braddock, Penn.—This contract (p. 490), which provides for furnishing the Rankin School Board with three-quarter mine-run coal, has been awarded to **McCready Bros.,** at 8½c. per bu. Address Secy. H. W. Peters, School Bd. Braddock, Penn.

1476—Cedar Grove, N. J.—This contract (p. 531), which provides for furnishing the Essex County Hospital with approximately 19,000 tons of coal during the year beginning Nov. 1, has been awarded to **A. H. Ross & Co.** at $3.55 per ton. Address Supt. George C. Bergen, Pur. Dept., Room 206, Court House, Newark, N. J.

1486—Cooperstown, N. D.—This contract (p. 576), which provides for furnishing the Griggs County Commissioners with coal for the local Court House, has been awarded to the **Erick Erickson Co.** on the following basis: anthracite, $10.50; Hocking Valley, $7.25; Pocahontas, $7.75. Address County Audr. H. S. Rearick, Cooperstown, N. D.

✚**1489—Trenton, N. J.**—This contract (p. 576), which provides for furnishing the State Home for Girls with coal, has been awarded to the **Philadelphia and Reading Coal and Iron Co.** on the following basis, prices not including the State Tax of 2½% of the cost of the coal at the mines: 700 tons of buckwheat at $2.50; 50 tons of chestnut, $5.85; 50 tons of stove, $5.50. Address Supt. (Mrs.) E. V. H. Mansell, New Jersey State Home for Girls, Trenton, N. J.

1492—Vintondale, Penn.—This contract (p. 576), which provides for furnishing the local school buildings with coal as required during the ensuing year, has been awarded to the **Vinton Colliery Co.,** on mine-run coal at $2.50 per ton delivered. This company was the only bidder on this business. Address Secy. George S. Blewett, Vintondale, Penn.

1495—Ashtabula, Ohio—This contract (p. 577), which provides for furnishing the Ashtabula County Commissioners with coal during the year beginning Oct. 15, has been awarded to the **Fairview Mining Co.,** at $1.99 per ton on mine-run coal and $2.09¾ for three-quarter inch screened lump. This company was the lowest of a number of bidders on this business. Address Clk. B. E. Brainard, Water County Comrs. Ashtabula, Ohio.

✚**1497—Cleveland, Ohio**—This contract (pp. 577, 616, 699), which provides for furnishing the City Water-Works with its annual fuel requirements, involving approximately 75,000 tons of slack coal, has been awarded to the **Valley Camp Coal Co.,** the gross consideration being $145,000. Address Comr. of Purchases and Supplies A. R. Callow, 511 City Hall, Cleveland, Ohio.

✚**1502—Bismarck, N. D.**—Awards have been made on this contract (p. 577), which provides for furnishing the various state schools with approximately 6,000 tons of coal, as follows: **North Dakota Lignite Mines Co.** (Dickson, N. D.), 5,000 tons of steam coal for the Agricultural College at Fargo, at $2.47; same company, 100 tons for the State School of Forestry at Bottineau, $2.65. **Washburn Lignite Coal Co.** (Wilton, N. D.), 100 tons for the State School of Science at Wahpeton, at $2.42; same company, 100 tons for the State Normal Industrial School at Ellendale, $2.30. **Interior Lumber Co.,** of Fargo, was awarded a contract for a small car of blacksmith coal and a car of anthracite for the Agricultural College at Fargo, and **J. E. Morris,** of Wahpeton, was awarded approximately the same amount for the State School of Science. Address Secy. Charles Brewer, State Bd. of Regents, Bismarck, N. D.

✚**1509—White Rock, S. D.**—This contract (p. 577), which provides for furnishing the Board of County Commissioners with approximately 100 tons of bituminous and 15 tons of anthracite coal, has been awarded to **O. L. Axness & Co.** at $6 per ton for bituminous and $10 per ton for anthracite. Address County Audr. O. E. Lien, Bd. of County Comrs., White Rock, S. D.

✚**1511—Bedford, Ind.**—This contract (p. 577), which provides for furnishing the Lawrence County Poor Farm with approximately 100 tons of coal, has been awarded to **Gale L. Wilking,** at $2.55 per ton for Indiana lump coal delivered at the farm. Address Audr. E. W. Edwards, County Comrs., Bedford, Ind.

✚**1512—Portage, Penn.**—This contract (p. 577), which provides for furnishing Miller vein or C prime coal to the local schools during the ensuing year as may be required, has been awarded to **E. M. Eicher** at $2.10 per ton delivered. Address Secy. H. D. Border, School Bd., Portage, Penn.

1517—Sioux Falls, S. D.—This contract (p. 577), which provides for furnishing approximately 250 tons of bituminous and 50 tons of anthracite coal, has been awarded as follows: **A. S. Johnson & Co.,** Hocking Valley, $6.95; **Sioux Falls Fuel Co.,** anthracite, $10.60. W. A. Mills Co. bid $6.98 on bituminous and $10.70 on anthracite, and H T. Parmley bid $7 on bituminous, $10.75 on anthracite. Address Audr. H. H. Howe, Minnehaha County, Sioux Falls, S. D.

1520—Akron, Ohio—This contract (p. 577), which provides for furnishing the Summit County Court House, Jail and County Infirmary with coal, has been awarded to the **Alages Coal & Ice Co.,** at $1.75 per ton for Youghiogheny slack coal, The Akron Coal Co. bid $1.80 for the same, and the Citizens Coal Co., bid $1.65 for Cambridge slack. Address Clk. U. G. High, Summit County, Akron, Ohio.

✚**1527—Flandreau, S. D.**—This contract (p. 616), which provides for furnishing the local City Government with 12 to 13 cars of Youghiogheny lump coal for use at the city pumping station, has been awarded to **O. A. J. Aaker.** Address Clk. J. R. Coonrod, Flandreau, S. D.

✚**1529—Glasgow, Mont.**—This contract (p. 616), which provides for furnishing the Valley County Board of Commissioners with coal for the Court House and Jail during the coming year, has been awarded to **W. W. Hurd,** at $7.75 per ton for Bear Creek lump. Address Clk., W. B. Shoemaker, Bd. of County Comrs., Glasgow, Mont.

✚**1538—Wellsville, Ohio**—This contract (p. 617), which provides for furnishing the local Board of Education with 1¼-in. Pittsburgh coal, has been awarded to **D. A. Forbes,** at $2.27½ per ton. Address Clk. F. H. Eckfeld, Bd. of Edu., Wellsville, Ohio.

✚**1539—Woonsocket, S. D.**—This contract (p. 617), which provides for furnishing the Sanborn County Court House with coal during the coming season, has been awarded to the **J. F. Anderson Lumber Co.,** at $5.98 per ton. Other bidders on this business were Colman Lumber Co., $6.22; C. H. Holonel (Alpena, S. D.), $6.20; F. N. Thisen, $6.25; S. D. Grain Co., $6.75; Farmers Elevator Co., $6.37. Address County Audr. C. B. Jacobson, Woonsocket, S. D.

Contract Notes

Hillsboro, N. H.—The Hillsboro Woolen Mills Co. consume about 125 tons of bituminous coal per month.

Woodbury City, N. J.—The contract for furnishing 45 tons of Lehigh coal to the City Hall and Fire Houses has been awarded to **S. A. Stewart,** at $6.04 per ton, delivered.

Noblesville, Ind.—The contract for furnishing the Hamilton County poor farm with approximately 100 tons of coal has been awarded to the **Noblesville Fuel and Supply Co.** at $3.95 per ton.

Dallas, Tex.—The J. W. Thompson Construction Co. has renewed its contract with the **McAlester Fuel Co.** for 8,000 tons of steam coal to be used in construction of the Union Terminal at Dallas, Tex.

Jeffersonville, Ind.—Contracts for county coal have been let as follows: 90 tons nut and slack, **F. M. Rose Coal Co.,** $2.45; 80 tons lump, **Drabelle-Yager Co.,** $3; 40 tons lump, **St. Bernard Mining Co.,** $3.35.

Lincoln, Neb.—The contract for furnishing the Police and Fire Department with coal during the year beginning Sept. 6 has been awarded to the **Easley-Graham Coal Co.** at $10.45 per ton for Pennsylvania anthracite nut.

Lockland, Ohio—The contract of the Philip Cary Manufacturing Co., involving 10,000 tons of coal, has been awarded through the **Kentucky Fuel Co.,** of Cincinnati, on the Loony Creek Coal Co.'s "Loony Creek" nut and slack coal.

Lewiston, Maine—The Lewiston "Journal" Co. has awarded a contract for furnishing 375 tons of New River coal to the **Pulsifer & Young Co.,** of Auburn. Of this, 200 tons is already delivered and the remainder will be delivered as needed.

Auburn, Maine—The Androscoggin Foundry Co. has awarded a contract for 16 cars of Jamison coke at $6 a ton to **Rogers, Brown & Co.,** of Boston. This contract expires in June, 1916. The coke will be delivered f.o.b. Auburn on M. C. R.R. tracks.

Fitchburg, Mass.—Crocker-Burbank Co., paper manufacturer, has awarded a contract for approximately 50,000 tons for the 12 months from Oct. 1, 1915, to the **Consolidation Coal Co.** on Georges Creek coal for delivery via water to Mystic Wharf, Boston.

Memphis, Tenn.—Memphis coal dealers recently announced a flat increase of 15c. per ton on Kentucky and Illinois coal, on account of the recent increase in freight rates. The increase will figure 15c. on 10 barrels to domestic users and 15c. per ton to steam users.

Houston, Tex.—Cargo of 2,800 tons of coal from Philadelphia on board the steamship Wilhelmina, consigned to J. H. Carroll, reached Houston on Oct. 23. The coal is for distribution to various coal yards in the interior of Texas, and will be shipped out by rail.

McAlester, Okla.—The contract for furnishing the local School Board with 500 tons of McAlester nut coal was awarded on Oct. 9 to **William Mullen** at $2.95 per ton. This is at 20c. below the contract price last year. Address Secretary School Board, McAlester, Okla.

Edmonton, Alberta, Canada—The contract for supplying the Civic Building with coal during the coming season has been awarded to the **Edmonton Standard Coal Co.** at $2.60 per ton for screened lump coal. Six bids were submitted on the business at prices ranging from $2.60 to $3.25 per ton.

Detroit, Mich.—The Detroit Copper and Brass Rolling Mills Co. has awarded to **Jewett, Bigelow & Brooks** the contract for supplying about 10,000 tons of nut, pea and slack to be delivered at the company's plant, Detroit. The price is not made public, but is understood to have been around $2.15.

Knoxville, Tenn.—The contract for coal for the City of Knoxville was not let by the old board, but has been brought over to the new board, just elected and installed. This new board has referred the matter to City Commissioners N. T. Little and J. G. Crumbliss, and it is said they will readvertise for bids.

Netherlands—Coal, selling prices Rotterdam, steam $7, gas $10; ocean freight, $9.50 per metric ton; imports materially reduced from previous years. Netherlands Oversea Trust will receive shipments for strictly Dutch firms. There is a so-called coal bureau which is designed to distribute to small consumers.

Ames, Iowa—The Electric Light & Water Department at this place consumes about 6,000 tons of steam coal per annum. The business is not done on competitive bids, and there is no contract. The usual price is about $2 per ton on track at Ames. Address Supt. Charles E. Warsaw, City of Ames, Electric Light and Water Dept., Ames, Iowa.

Detroit, Mich.—A contract for furnishing the United States Engineer Service at Sault Ste. Marie with 200 tons of three-quarter lump coal has been awarded to the **George Kenna Coal Co.** at $2.90 per ton. The Perry Coal Co. bid $2.90 and the Port Royal Dock Co., $3. Address Supt. L. C. Sabin, American Falls of St. Marys River, Sault Ste. Marie, Mich.

St. Joseph—The contract to furnish coal during the coming year for the Missouri State Hospital for the Insane at St. Joseph has been awarded to the **Pickering Coal Co.** of Richmond, Mo. It is claimed that this contract is awarded after an investigation as to the system of mining and a test of several car loads. The amount of coal consumed is about 10,000 tons.

Savannah, Ga.—Forty thousand tons of steam coal were bunkered from lighters in Savannah during the first six months of this year. Contracts are now pending whereby this business will be transferred to Charleston, N. C., the vessels taking bunkers from the new Southern Ry. coal terminals plant recently opened there. The greater part of this new Charleston fuel business will be done in Clinchfield coal.

Topeka, Kan.—The County Commissioners have let the contract for the coal supply for the ensuing year to the **Topeka Cold Storage, Ice and Fuel Co.,** at $3.24 per ton, and the **Topeka Coal Co.** on coarse mill at $2.85. It also contracted for Osage lump for the indigent poor to the **Topeka Coal Co.** at $3.72. For the poor farm, Osage lump coal to the **Jackson-Walker Co.** at $3.17. For the Crittendon Home to the **Southwestern Coal Co.,** on Osage lump, $3.80.

Toledo, Ohio—The Board of Control has awarded a number of small contracts for various city departments. The **Big Four Coal Co.** was given the contract for 500 tons of Pocahontas mine-run at $2.75 for the House of Correction, 50 tons of Hocking lump to the fire department at $3.25, and 180 tons of Pocahontas mine-run to the police department at $3.25. The **West Crescent Coal Co.,** Toledo, will supply 100 tons of Jackson lump to the county hospital at $4.25.

Auburn, Maine—The contract for the supply of coal for heating the Androscoggin County buildings was awarded to **W. E. Cloutier & Co.,** of Lewiston. Georges Creek coal was specified and about 500 tons are used during the year. There is storage capacity for 150 tons and this amount was delivered, the remainder to be supplied as needed. The contract price was less than $4.75. This contract expires in July, 1916, and is advertised for by the County Commissioners. George Pottle is chairman.

Boston, Mass.—It is understood that the Bay State Ry. has recently purchased an extra supply of low volatile steaming coal amounting to approximately 15,000 tons. For the regular contract of this company, involving about 156,000 tons, see contract 802, Vol. 7, pp. 1005, 1085, 1128. This latest purchase provides for 9,000 tons to be delivered alongside power stations, Quincy Point, Mass., and 3,000 tons each to Lynn and Chelsea, Mass. Deliveries are to be completed in 60 days. It is understood that the Quincy Point order was awarded to the **Chesapeake & Ohio Coal Agency** on New River coal and the Lynn and Chelsea portions to the **Consolidation Coal Co.** on Georges Creek coal.

Billings, Mont.—The contract for furnishing Yellowstone County with coal for the coming year was let to the **Hallowell Coal and Feed Co.,** their bid being the lowest. This contract calls for approximately 1,500 tons of coal. The successful bid follows: No. 1 lump coal, delivered at the court-house, county jail and poor in Billings, $4.40 per ton; delivered at the county poor farm and detention hospital, $5.25 per ton. The other bids were: Crystal Ice and Fuel Co., court-house and jail, $4.60 per ton; poor in Billings, $4.85 per ton; poor farm and detention hospital, $5.10 per ton. C. E. Tarr Coal and Ice Co., court-house and jail, $4.75; detention hospital and poor farm, $5.50; poor in Billings, $5.25. Billings Coal and Ice Co., court-house and jail, $4.75; detention hospital and poor farm, $5.50; poor in Billings, $4.90.

Kansas City, Mo.—The contract for furnishing the local City Water-Works with coal (p. 286), which was announced as being awarded to the Central Coal and Coke Co. at $2.20 per ton for mill and $2.05 per ton for slack, failed to be approved by the City Council, and is still being considered. Bids received on the contract were as follows:

		Mill		Cherok.	Washed Screen.	
	Slack	Run	Nut	M.-R.	Slack	Lump
Central Coal & C. Co.	$2.05	$2.20	$2.54	$2.40	$3.05	$2.64
Cherokee Fuel Co..	2.05	2.30	2.45	2.30	3.05	2.55
Gray-Bryan S. C. Co.	2.05	2.25	2.60	2.45	3.05	2.70
K. C. Coal & Mat. Co..	2.05	2.30	2.55	2.55	...	3.05

For the fiscal year 1914 there was used 6,960 tons of slack, 24,607 tons of mill-run and 717 tons of nut coal. There were no other kinds of coal used. Address Pres. J. D. Eubank, Bd. of Fire and Water Comrs., Kansas City, Mo.